



3 1761 05478250 3









Digitized by the Internet Archive  
in 2007 with funding from  
Microsoft Corporation





(6) 7893

NEW WORKS AND NEW EDITIONS,  
LATELY PUBLISHED BY LEA & BLANCHARD.

LISTON AND MÜTTER'S  
SURGICAL LECTURES.

A BEAUTIFUL VOLUME, PROFUSELY ILLUSTRATED.

LECTURES

ON THE

OPERATIONS OF SURGERY,

AND ON

DISEASES AND ACCIDENTS

REQUIRING OPERATIONS.

DELIVERED AT UNIVERSITY COLLEGE, LONDON.

By ROBERT LISTON, Esq., F. R. S., &c.

EDITED,

WITH NUMEROUS ALTERATIONS AND ADDITIONS, BY

T. D. MÜTTER, M. D.,

PROFESSOR OF SURGERY IN THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

IN ONE LARGE AND BEAUTIFULLY PRINTED OCTAVO VOLUME.

*With Two Hundred and Sixteen Illustrations on Wood.*

This work contains much original matter of Professor Mütter's, amounting to about two hundred and fifty pages, embodying the results of his great experience, and adopting the whole to the wants of the American Profession. The Lectures are those which have attracted so much attention as published in the *Lancet*. They are here reproduced entire, omitting none of the original wood engravings, and introducing many new and valuable ones, rendering this altogether one of the most completely illustrated works of the kind, that has for some time been presented to the medical public. Among the additions of Professor Mütter, will be found full and elaborate Treatises on Staphylopharynx, the different Plastic Operations, Club-Foot, Affections of the Eye, Deformities from Burns, and many other important subjects, not to be met with in so enlarged a form in, perhaps, any other work on Surgery. The chapters containing them are fully illustrated with numerous original and highly curious engravings.

“It is all plain and practically useful information. Illustrations abound, interspersed through the 565 large octavo pages. Altogether it is a desirable book. Its style, the importance of the subjects discussed, the facts detailed, and the high authority of the lecturer, together with that of his annotator, must exert a beneficial influence on the operative surgical practice of the whole country.”—*Boston Medical and Surgical Journal*.



# LEA & BLANCHARD'S LATE PUBLICATIONS.

NOW READY, FEBRUARY, 1846,

## DUNGLISON'S THERAPEUTICS.

A NEW EDITION, MUCH IMPROVED.

### GENERAL THERAPEUTICS AND MATERIA MEDICA.

WITH ONE HUNDRED AND TWENTY ILLUSTRATIONS.

ADAPTED FOR A MEDICAL TEXT-BOOK.

BY ROBLEY DUNGLISON, M.D.,

PROFESSOR OF INSTITUTES OF MEDICINE, ETC., IN JEFFERSON MEDICAL COLLEGE; LATE PROFESSOR OF MATERIA MEDICA, ETC., IN THE UNIVERSITIES OF VIRGINIA AND MARYLAND, AND IN JEFFERSON MEDICAL COLLEGE.

THIRD EDITION, REVISED AND IMPROVED, IN TWO OCTAVO VOLUMES, WELL BOUND.

In this edition much improvement will be found over the former ones. The author has subjected it to a thorough revision, and has endeavoured to so modify the work as to make it a more complete and exact exponent of the present state of knowledge on the important subjects of which it treats. The favour with which the former editions were received, demanded that the present should be rendered still more worthy of the patronage of the profession, and this alteration will be found not only in the matter of the volumes, but also in the numerous illustrations introduced, and the general improvement in the appearance of the work.

### LIST OF ILLUSTRATIONS.

#### VOL. I.

- |  |   |  |
|--|---|--|
| 1. <i>Cephaelis Ipecacuanha</i> .                            | 25. <i>Chenopodium Anthelminticum</i> . | 53. <i>Conium maculatum</i> .                          |
| 2. Brown Ipecacuanha root.                                   | 26. <i>Spigelia Marilandica</i> .       | 54. <i>Humulus Lupulus</i> .                           |
| 3. Striated Ipecacuanha root—<br>Undulated Ipecacuanha root. | 27. <i>Nephrodium Filix mas</i> .       | 55. Dried lupulinic grain with its<br>hilum magnified. |
| 4. Iodidum Ipecacuanha root.                                 | 28. <i>Punica granatum</i> .            | 56. <i>Cannabis sativa</i> .                           |
| 5. <i>Gillenia stipulacea</i> .                              | 29, 30. Inhaling Bottles.               | 57. <i>Lycopus Virginicus</i> .                        |
| 6. <i>Lobelia inflata</i> .                                  | 31. <i>Balsamadendron Myrrha</i> .      | 58. <i>Strychnos Nux Vomica</i> .                      |
| 7. <i>Sanguinaria Canadensis</i> .                           | 32. <i>Acacia Arabica</i> .             | 59. <i>Ruta graveolens</i> .                           |
| 8. <i>Apocynum Androsæmifolium</i> .                         | 33. <i>Olea Europæa</i> .               | 60. <i>Secale cornutum</i> .                           |
| 9. <i>Erythronium Americanum</i> .                           | 34. <i>Saccharum officinarum</i> .      | 61. <i>Cinnamomum Zeylanicum</i> .                     |
| 10. <i>Euphorbia corollata</i> .                             | 35. <i>Linum usitatissimum</i> .        | 62. <i>Cardamom</i> .                                  |
| 11. <i>Ficus Carica</i> .                                    | 36. <i>Astragalus verus</i> .           | 63. <i>Cariophyllus aromaticus</i> .                   |
| 12. <i>Ricinus communis</i> .                                | 37. <i>Cetraria Islandica</i> .         | 64. <i>Fœniculum vulgare</i> .                         |
| 13. <i>Rheum palmatum</i> .                                  | 38. <i>Fucus vesiculosus</i> .          | 65. <i>Monarda coccinea</i> .                          |
| 14. <i>Rheum compactum</i> .                                 | 39. Inhaler.                            | 66. <i>Hedeoma pulegioides</i> .                       |
| 15. <i>Aloe Socotrina</i> .                                  | 40. <i>Cantharides</i> .                | 67. <i>Myristica moschata</i> .                        |
| 16. Legume and leaflet of Acute<br>leaved Alexandrian Senna. | 41. <i>Leontodon Taraxacum</i> .        | 68. Nutmeg in the shell surround-<br>ed by the mace.   |
| 17. Legume and leaflet of <i>C. obo-</i><br><i>vata</i> .    | 42. <i>Erigeron Philadelphicum</i> .    | 69. <i>Gaultheria procumbens</i> .                     |
| 18. Tinnevely Senna.   | 43. <i>Arbutus Uva ursi</i> .           | 70. <i>Juniperus communis</i> .                        |
| 19. <i>Cassia Marilandica</i> .                              | 44. <i>Eupatorium perfoliatum</i> .     | 71. <i>Citrus Aurantium</i> .                          |
| 20. <i>Podophyllum</i> .                                     | 45. <i>Asclepias tuberosa</i> .         | 72. <i>Laurus Camphora</i> .                           |
| 21. <i>Hebradendron cambogioides</i>                         | 46. <i>Arum triphyllum</i> .            | 73. <i>Drymis Winteri</i> .                            |
| 22. <i>Momordica Elaterium</i> .                             | 47. <i>Carthamus tinctorius</i> .       | 74. <i>Acorus Calamus</i> .                            |
| 23. <i>Apocynum cannabinum</i> .                             | 48. Warm-bath.                          | 75. <i>Piper nigrum</i> .                              |
| 24. <i>Convolvulus panduratus</i> .                          | 49. Hip-bath.                           | 76. Electrical Apparatus for Med-<br>ical purposes.    |
|  | 50. Foot-bath.                          |  |
|  | 51. <i>Hyoscyamus Niger</i> .           |  |
|  | 52. <i>Datura Stramonium</i> .          |  |

#### VOL. II.

- |  |   |   |
|--|---|---|
| 1. <i>Cocculus palmatus</i> . (Male<br>plant.) | 17. <i>Diospyros Virginiana</i> .                 | 32. Particles of white East India<br>Arrow-root.          |
| 2. <i>Gentiana Catesbæi</i> .                  | 18. <i>Heuchera acerifolia</i> .                  | 33. Particles of West India Ar-<br>row-root.              |
| 3. <i>Frasera Walteri</i> .                    | 19. <i>Spiræa tomentosa</i> .                     | 34. Particles of Tous-les-mois.                           |
| 4. <i>Sabbatia angularis</i> .                 | 20. <i>Statice Caroliniana</i> .                  | 35. Particles of Potato starch seen<br>by the microscope. |
| 5. <i>Coptis trifolia</i> .                    | 21. <i>Colchicum autumnale</i> .                  | 36. <i>Janipha Manihot</i> .                              |
| 6. <i>Aletris farinosa</i> .                   | 22. <i>Veratrum Album</i> . Ver. Al-<br>biflorum. | 37. Particles of Tapioca as seen<br>by the microscope.    |
| 7. <i>Aristolochia serpentaria</i> .           | 23. <i>Cimicifuga racemosa</i> .                  | 38. <i>Sagus Rumphii</i> .                                |
| 8. <i>Asarum Canadense</i> .                   | 24, 25. Shower-bath.                              | 39. Particles of Sago-meal.                               |
| 9. <i>Anthemis Cotula</i> .                    | 26. <i>Abies excelsa</i> .                        | 40. Particles of Potato sago.                             |
| 10. <i>Magnolia glauca</i> .                   | 27. <i>Ranunculus acris</i> .                     | 41. <i>Cycas revoluta</i> or the Japan<br>Sago-tree.      |
| 11. <i>Magnolia macrophylla</i> .              | 28. <i>Aralia nudicaulis</i> .                    | 42. <i>Avena Sativa</i> .                                 |
| 12. <i>Geum Virginianum</i> .                  | 29. <i>Solanum dulcamara</i> .                    | 43. Particles of Wheat Starch.                            |
| 13. <i>Hepatica Americana</i> .                | 30. <i>Tacca pinnatifida</i> .                    |   |
| 14. Indigo.                                    | 31. Particles of Tahiti Arrow-<br>root.           |   |
| 15. <i>Cornus Florida</i> .                    |   |   |
| 16. <i>Liriodendron tulipifera</i> .           |   |   |

"Our junior brethren in America will find in these volumes of Professor Dunglison, a 'THESAURUS MEDICAMINUM,' more valuable than a large purse of gold."—*Medico-Chirurgical Review for Jan., 1845.*

LEA & BLANCHARD'S LATE PUBLICATIONS:

# CHELIUS'S SYSTEM OF SURGERY.

## A SYSTEM OF SURGERY,

BY J. M. CHELIUS,

DOCTOR IN MEDICINE AND SURGERY, PUBLIC PROFESSOR OF GENERAL AND OPHTHALMIC SURGERY, ETC. ETC., IN THE UNIVERSITY OF HEIDELBERG.

TRANSLATED FROM THE GERMAN,

AND ACCOMPANIED WITH ADDITIONAL NOTES AND OBSERVATIONS,

BY JOHN F. SOUTH,

SURGEON TO ST. THOMAS'S HOSPITAL.

EDITED, WITH REFERENCE TO AMERICAN AUTHORITIES,

BY GEORGE W. NORRIS, M. D.

PUBLISHING IN NUMBERS, AT FIFTY CENTS EACH.

SEVEN NUMBERS ARE NOW READY.

That this work should have passed to six editions in Germany, and have been translated into no less than seven languages, is sufficient proof of its value. It contains what is, perhaps, embraced to an equal extent in no other work on the subject now before the public, a complete System of Surgery, both in its principles and practice. The additions of the translator, Mr. South, are very numerous, bringing the work up to the very day of publication, and embodying whatever may have been omitted by the author respecting English Surgery: while Dr. Norris will take equal care in representing the state of the science in America.

"Judging from a single number only of this work, we have no hesitation in saying that, if the remaining portions correspond at all with the first, it will be by far the most complete and scientific system of surgery in the English language. We have, indeed, seen no work which so nearly comes up to our idea of what such a production should be, both as a practical guide and as a work of reference, as this; and the fact that it has passed through six editions in Germany, and been translated into seven languages, is sufficiently convincing proof of its value. It is methodical and concise, clear and accurate; omitting all minor details and fruitless speculations, it gives us all the information we want in the shortest and simplest form."—*The New York Journal of Medicine.*

"The scope of Professor Chelius's Manual is indicated by its title: it professes to treat, systematically, of the science and art of surgery, but within such compass as to render the work an appropriate introduction and companion to his lectures. The care, however, which has been bestowed upon its construction, and the labour which its research evinces, would be ill-repaid were it confined to this sphere; and we may conscientiously say that we know of no Manual of surgery, on the whole, more deserving of public confidence, or more valuable as a guide and refresher to the young practitioner. It is not our intention at present critically to analyze Mr. South's labours; but we should be guilty of an injustice to him and to our readers if we did not cordially recommend his work as having fair promise of forming, what it is the translator's ambition it should be, a sound and comprehensive system of practical surgery. The notes and text are so intermingled as to render it continuously readable, without presenting those abrupt transitions which are so disagreeable in many works similarly arranged. The faults of omission, &c., at which we have hinted in our comments on the first chapter of our author's work, (viz., that on 'Inflammation,') have been amply compensated by the copious and excellent digest of his translator and annotator, who is justly proud of availing himself of the labours of our own countrymen in this department of pathology, while he gives their due meed of notice and respect to the contributions of our continental brethren. The references which are given to original works have evidently been carefully collated, and will be found of great value to the student and practitioner who may wish for more copious information on any particular branch of surgery; and the practical remarks and illustrations with which the work abounds, are a good guarantee of the translator's ability to do justice to his task, at the same time that they prove that Mr. South has not failed to avail himself industriously of the large opportunities which his hospital appointment has afforded him."—*The British and Foreign Medical Review.*

"We will, therefore, content ourselves for the present with directing the attention of the profession to it, as being the most complete system of surgery in any language, and one that is of equal utility as a practical guide and as a work of reference. The fact of its having reached six editions in Germany, and of its having been translated into seven languages, are more convincing proofs of its value than anything that we can say. Mr. South has performed his task with much judgment, and has certainly made a most useful addition to the medical literature of this country by rendering Chelius's work into English."—*The Lancet.*



LEA & BLANCHARD'S LATE PUBLICATIONS.

## COMPENDIUM OF CHAPMAN'S LECTURES.

A COMPENDIUM OF LECTURES

ON THE

## THEORY AND PRACTICE OF MEDICINE.

DELIVERED BY PROFESSOR CHAPMAN IN THE UNIVERSITY OF PENNSYLVANIA.

PREPARED, WITH PERMISSION, FROM DR. CHAPMAN'S MANUSCRIPTS, AND PUBLISHED WITH HIS APPROBATION,

BY N. D. BENEDICT, M. D.

IN ONE VERY NEAT OCTAVO VOLUME.

### CONTENTS.

Remarks on the Classification of Diseases—Fever in General—Intermittent Fever—Remittent Fever—Continued Fever, (Mild, Intermediate, and Extreme Forms)—Yellow Fever—Endemic Pneumonic, or Spotted Fever—Diseases of the Heart and Blood-vessels, (Inflammatory, Organic, and Nervous)—Acute Carditis, Pericarditis, and Endocarditis—Chronic Carditis, Pericarditis, and Endocarditis—Hypertrophy of the Heart—Dilatation of the Heart—Atrophy of the Heart—Rupture of the Heart—Affections of the Valves of the Heart—Palpitations—Acute Arteritis—Degenerations of Arteries—Aneurism of Arteries—Phlebitis—Acute Inflammation of the Throat—Chronic Inflammation of the Throat—Dysphagia—Parotitis—Dysentery, (Inflammatory)—Dysentery, (Congestive)—Diarrhoea—Cholera Morbus—Cholera Infantum—Flatulent Colic—Bilious Colic—Colica Pictorum—Acute Peritonitis—Chronic Peritonitis—Acute Catarrh—Catarrhus Æstivus—Chronic Catarrh—Acute Bronchitis—Chronic Bronchitis—Catarrhus Senilis—Acute Infantile Bronchitis—Chronic Infantile Bronchitis—Croup—Acute Infantile Asthma—Whooping-Cough—Acute Laryngitis—Chronic Laryngitis—Pleuropneumonia—Congestive Pneumonia—Chronic Pleurisy and Pneumonia—Apoplexy—Palsy—Epilepsy—Hysteria—Chorea—Neuralgia—Diabetes.

It will be seen that this work is entirely distinct from the volumes of Dr. Chapman on Eruptive Fevers, &c., and on Thoracic and Abdominal Viscera. All the works are printed and bound to match.

## BIRD ON URINARY DEPOSITS.

### URINARY DEPOSITS,

### THEIR DIAGNOSIS, PATHOLOGY AND THERAPEUTICAL INDICATIONS.

BY GOLDING BIRD, A. M., M. D., &c.

In One Octavo Volume, Cloth, with Cuts.

"One of the best fruits of this 'revival' in urinary pathology is the work of Dr. Golding Bird, which we are about introducing to the notice of our readers.

"In 1843 Dr. Bird delivered a course of lectures on the diagnosis and pathology of urinary sediments. They were published in the London Medical Gazette, attracted much attention at the time, and were subsequently translated into German. These lectures form the groundwork of the present publication, though much extended and nearly rewritten.

"From the space which we have given to the consideration of this little volume, our readers will naturally infer the exalted opinion we entertain of it. Yet we fear we have still conveyed a very inadequate notion of its merits. Where almost everything is of value, it is difficult to select or condense. Such of our readers as wish to increase their store of practical knowledge, and enlarge the sphere of their usefulness, we refer to the volume itself, and recommend its possession. We now take leave of Dr. Bird with an expression of great readiness to meet him again in the same, or some analogous line of investigation."—*American Medical Journal*.

"The author of this volume is at once a chemist skilled in analysis, and a practitioner who has for years carefully noted diseases at the bedside. It is therefore manifest, that he is qualified in an uncommon degree to discuss the subject of urinary deposits, in which the phenomena belong as much to chemistry as to pathology. Such are the labourers from whom science is likely to derive the most valuable results, as to all the pathological conditions which involve chemical reactions. The mere chemist is not competent to the task of unfolding them; and the pathologist without the tests and reagents of the laboratory, is unable to account for the series of changes. The union of the two, as it is found in Dr. Bird, is indispensable to a successful prosecution of such researches. It is as a manual for the practitioner in urinary affections that he presents his work to the profession, and in that character it has the highest claims to our attention. Its matter is condensed, and so arranged, that ready reference may be made to any topic."—*The Western Journal of Medicine and Surgery*.



LEA & BLANCHARD'S LATE PUBLICATIONS.

# SIMON'S CHEMISTRY OF MAN.

## ANIMAL CHEMISTRY.

WITH REFERENCE TO THE PHYSIOLOGY AND PATHOLOGY OF MAN.

BY DR. J. FRANZ SIMON.

TRANSLATED AND EDITED BY

GEORGE E. DAY, M.A. & L.M. CANTAB., &c.

With Plates, in One Volume, 8vo.

"A work that obtained for its author a European reputation, and is universally regarded as by far the most complete treatise that has yet appeared on Physiological Chemistry."—*Editor's Preface.*

"No treatise on physiological chemistry approaches, in fullness and accuracy of detail, the work which stands at the head of this article. It is the production of a man of true German assiduity, who has added to his own researches the results of the labours of nearly every other inquirer in this interesting branch of science. The death of such a labourer, which is mentioned in the preface to the work as having occurred prematurely in 1842, is indeed a calamity to science. He had hardly reached the middle term of life, and yet had made himself known all over Europe, and in our country, where his name has been familiar for several years as among the most successful of the cultivators of the chemistry of man. . . . It is a vast repository of facts, to which the teacher and student may refer with equal satisfaction."—*The Western Journal of Medicine and Surgery.*

"Several reasons combine to render Dr. Simon's work peculiarly valuable. In the first place, the author evidently understands his subject, and discusses it with great ability; in the next place, his opinions have been formed, in a great measure, from original investigations; and, lastly, he seems to have no theories beyond facts—no dogmas to sustain at the expense of truth and principle; but he enters upon the investigation like a true philosopher, and the result is such as we have seen."—*The Western Lancet.*

# BUDD ON THE LIVER.

## ON DISEASES OF THE LIVER.

BY GEORGE BUDD, M.D., F.R.S., &c.

WITH

WOOD-CUTS AND COLOURED PLATES,

IN THE FIRST STYLE OF ART.

In One Octavo Volume, Sheep.

"We cannot too strongly recommend the diligent study of this volume. The work cannot fail to rank the name of its author among the most enlightened pathologists and soundest practitioners of the day."—*Medico-Chirurgical Review.*

"With the new year, Messrs. Lea & Blanchard have brought out one of those sterling works on medicine which it refreshes one to examine. It is a sound, practical guide in every-day practice, and opportune, from the circumstance that it does not interfere with any recent publication. Those only who have felt how difficult it is to decide, or rather determine with certainty upon the true condition of the liver, under some indications of the system, can appreciate a treatise like this."—*Boston Med. and Surg. Journal.*

# DURLACHER ON CORNS, BUNIONS, ETC.

## A TREATISE ON CORNS, BUNIONS, THE DISEASES OF THE NAILS, AND THE GENERAL MANAGEMENT OF THE FEET.

By LEWIS DURLACHER,

SURGEON CHIROPODIST, BY SPECIAL APPOINTMENT, TO THE QUEEN.

In One small Duodecimo Volume, Cloth.

"These important subjects are in this work lifted above the quackery which has generally invested them, and we find them treated with evident marks of science and education."—*North Am.*

LEA & BLANCHARD'S LATE PUBLICATIONS.

HUGHES ON THE LUNGS AND HEART.

CLINICAL INTRODUCTION TO THE PRACTICE OF  
AUSCULTATION,

AND OTHER MODES OF PHYSICAL DIAGNOSIS.

INTENDED TO SIMPLIFY THE STUDY OF

THE DISEASES OF THE HEART AND LUNGS.

By H. M. HUGHES, M. D., &c.

In One Duodecimo Volume, (with a Plate.)

CHURCHILL'S MIDWIFERY,  
WITH NUMEROUS ADDITIONS.

NEW EDITION, JUST PUBLISHED.

L. & B. have just issued a new edition of this valuable and standard work on the Theory and Practice of Midwifery, edited by Huston, in One Octavo Volume, well bound, with numerous illustrations.

ALSO, LATELY PUBLISHED,

NEW EDITIONS OF

PEREIRA'S MATERIA MEDICA.

REVISED, WITH ADDITIONS, BY CARSON.

In Two Large Octavo Volumes, many Cuts,

AND OF

WATSON'S PRACTICE OF PHYSIC,

EDITED BY CONDIE,

IN ONE OCTAVO VOLUME;

*Of nearly Eleven Hundred Large Pages, bound in strong Leather, with raised bands.*

NEARLY READY,

KIRBY & SPENCE'S ENTOMOLOGY.

AN INTRODUCTION TO ENTOMOLOGY,

OR ELEMENTS OF THE

NATURAL HISTORY OF INSECTS;

COMPRISING AN ACCOUNT OF

NOXIOUS AND USEFUL INSECTS,

OF THEIR

METAMORPHOSES, FOOD, STRATAGEMS, HABITATIONS, SOCIETIES, MOTIONS, NOISES, HYBERNATION, INSTINCT, &c. &c.

WITH PLATES.

By WILLIAM KIRBY, M. A., F. R. S. & L. S., &c. &c.,

AND WILLIAM SPENCE, Esq., F. R. S. & L. S.

*From the Sixth London Edition, Corrected, and considerably Enlarged.*

IN ONE LARGE OCTAVO VOLUME.



LEA & BLANCHARD'S LATE PUBLICATIONS.

LATELY PUBLISHED, A NEW AND MUCH IMPROVED EDITION OF  
DRUITT'S SURGERY.

THE  
PRINCIPLES AND PRACTICE OF MODERN SURGERY.

BY ROBERT DRUITT, SURGEON.

FROM THE THIRD LONDON EDITION.

ILLUSTRATED BY ONE HUNDRED AND FIFTY-THREE WOOD ENGRAVINGS.

WITH NOTES AND COMMENTS,

BY JOSHUA B. FLINT, M. M., S. S.

*In One Volume, Octavo.*

"An unsurpassable compendium not only of surgical but of medical practice."—*London Med. Gaz.*

A NEW AND IMPROVED EDITION OF  
FERGUSON'S OPERATIVE SURGERY.

A SYSTEM OF PRACTICAL SURGERY.

BY WILLIAM FERGUSON, F. R. S. E.

SECOND AMERICAN EDITION, REVISED AND IMPROVED,

*With two hundred and fifty-two Illustrations from drawings by Bagg, engraved by Gilbert.*

WITH NOTES AND ADDITIONAL ILLUSTRATIONS.

BY GEORGE W. NORRIS, M. D.

In one beautiful octavo volume of six hundred and forty large pages.

The publishers commend to the attention of the profession this new and improved edition of Ferguson's standard work, as combining *cheapness and elegance*, with a clear, sound, and practical treatment of every subject in surgical science. Neither pains nor expense have been spared to make it worthy of the reputation which it has already acquired, and of which the rapid exhaustion of the first edition is sufficient evidence. It is extensively used as a text-book in many medical colleges throughout the country.

SIR ASTLEY COOPER'S SURGICAL WORKS.

COOPER ON THE ANATOMY AND DISEASES OF THE BREAST.

TOGETHER WITH

TWENTY-FIVE MISCELLANEOUS SURGICAL PAPERS:

NOW FIRST PUBLISHED IN A COLLECTIVE FORM.

IN ONE LARGE IMPERIAL OCTAVO VOLUME.

With 252 Figures on 36 Plates.

COOPER ON HERNIA.

IN ONE LARGE IMPERIAL OCTAVO VOLUME.

*With over 130 Figures on 26 Plates.*

COOPER ON THE TESTIS AND THYMUS GLAND.

ILLUSTRATED WITH 177 FIGURES ON 27 PLATES.

In One Imperial Octavo Volume.

COOPER ON FRACTURES AND DISLOCATIONS.

WITH 133 ILLUSTRATIONS ON WOOD.

In one neat Octavo Volume.

LEA & BLANCHARD'S LATE PUBLICATIONS.

# BRODIE'S SURGICAL WORKS.

BRODIE'S SURGICAL LECTURES.

NOW READY,

## CLINICAL LECTURES

ON

### SURGERY.

IN ONE NEAT OCTAVO VOLUME.

These Lectures, in passing through the columns of "The Medical News," during the last year, have received the unanimous approbation of the profession in this country, and will no doubt be eagerly sought for in their complete state.

---

## BRODIE ON URINARY ORGANS.

LECTURES

ON THE

### DISEASES OF THE URINARY ORGANS.

FROM THE THIRD LONDON EDITION.

WITH ALTERATIONS AND ADDITIONS.

*In one small octavo volume, cloth.*

This work has throughout been entirely revised, some of the author's views have been modified, and a considerable proportion of new matter has been added, among which is a lecture on the Operation of Lithotomy.

---

## BRODIE ON THE JOINTS.

PATHOLOGICAL AND SURGICAL OBSERVATIONS

ON THE

### DISEASES OF THE JOINTS.

FROM THE FOURTH LONDON EDITION.

WITH THE AUTHOR'S ALTERATIONS AND ADDITIONS.

*In one small octavo volume, cloth.*

"To both the practical physician and the student, then, this little volume will be one of much service, inasmuch as we have here a condensed view of these complicated subjects thoroughly investigated by the aid of the light afforded by modern Pathological Surgery."—*N. Y. Journal of Medicine.*

---

THESE WORKS FORM A PART OF

### SIR BENJAMIN BRODIE'S

LECTURES, ILLUSTRATIVE OF

### VARIOUS SUBJECTS IN PATHOLOGY AND SURGERY,

The remainder of which will be issued.

BRODIE'S

SURGICAL WORKS.

21. 2. 1982





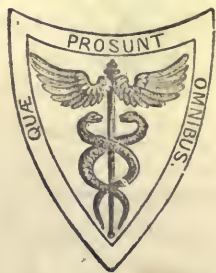
Ms  
B

SELECT  
SURGICAL WORKS

OF  
*Colling*  
SIR) BENJAMIN BRODIE, BART., V. P. R. S.

CONTAINING  
CLINICAL LECTURES ON SURGERY,  
SURGICAL OBSERVATIONS ON THE DISEASES OF THE JOINTS,  
AND  
THE DISEASES OF THE URINARY ORGANS.

IN ONE VOLUME.



PHILADELPHIA:  
LEA AND BLANCHARD.

1847.

299006  
13-4-34

THE  
SOCIETY

1885

1886

1887

1888

1889

1890  
1891  
1892

THE  
SOCIETY  
1893



# CLINICAL LECTURES

ON

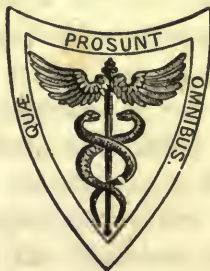
# SURGERY,

DELIVERED AT ST. GEORGE'S HOSPITAL.

*J. D. Wylie*  
BY *H*

SIR BENJAMIN C. BRODIE, BART., V.P.R.S.,

SERJEANT-SURGEON TO THE QUEEN;  
SURGEON IN ORDINARY TO HIS ROYAL HIGHNESS PRINCE ALBERT;  
ETC. ETC. ETC.



PHILADELPHIA:  
LEA AND BLANCHARD.  
1846.

CLINICAL LECTURES

STURGEON

DELIVERED BY DR. J. B. HENNING

*Handwritten signature and scribbles*

Entered according to the Act of Congress, in the year 1846, by  
LEA AND BLANCHARD,  
in the Clerk's Office of the District Court for the Eastern District of Pennsylvania.



PHILADELPHIA:  
T. K. & P. G. COLLINS,  
PRINTERS.  
1846

## EDITOR'S PREFACE.

---

SIR BENJAMIN BRODIE stands, confessedly, at the present time, at the head of the Surgical Profession of Great Britain. He holds the highest surgical appointment, that of Serjeant-Surgeon to the Queen, a station which he also occupied under the two preceding sovereigns. He has enjoyed for a long period an extensive practice, and his vast experience with his sound judgment and highly cultivated mind, renders his opinions of the highest authority.

His clinical lectures have always been exceedingly popular, and deservedly so, from their eminently practical character, the clearness of the author's language, and the plain common sense which they display. They are, however, almost entirely unavailable for reference, being scattered in the pages of various periodicals extending through a considerable number of years. Believing, that if brought together, they would constitute a body of doctrine highly instructive to the student, and useful to the surgeon as a practical guide, it was determined to collect them and issue them in the Library department of the Medical News. The eagerness with which the Numbers containing these lectures have been sought for, and the expressions of approval received from numerous correspondents fully confirm the correctness of the editor's convictions.

But little attempt has been made at arrangement in this volume, as it must necessarily have been imperfect from the manner in which the lectures were delivered,—most of them having been given in distinct series, with frequent references to those of the same course, and their order could

not, therefore, have been changed without breaking up their connection and altering the language,—a liberty the editor conceived to be unjustifiable. Any inconvenience which this want of arrangement might occasion is obviated by the copious index which is appended.

Should sufficient materials be obtained, another volume may hereafter be added so as to complete the works of the distinguished author.

PHILADELPHIA,

March, 1846.



# CONTENTS.

## LECTURE I.

	PAGE
Introductory Discourse	17

## LECTURE II.

Illustrations of some important circumstances connected with Operative Surgery	31
--	----

## LECTURE III.

Illustrations of some important circumstances connected with Operative Surgery. (Continued)	38
---	----

## LECTURE IV.

On Mortification	50
------------------	----

## LECTURE V.

On Mortification. (Continued)	59
-------------------------------	----

## LECTURE VI.

On Mortification. (Continued)	67
-------------------------------	----

## LECTURE VII.

On Mortification. (Continued)	78
-------------------------------	----

## LECTURE VIII.

On Mortification. (Continued)	84
-------------------------------	----

## LECTURE IX.

On Mortification. (Continued)	94
-------------------------------	----

## LECTURE X.

Inflammation of the Veins	103
---------------------------	-----

	PAGE
LECTURE XI.	
Inflammation of the Veins. (Continued) - - - -	107
LECTURE XII.	
Varicose Veins and Ulcers of the Legs - - - -	111
LECTURE XIII.	
On Varicose Veins and Ulcers of the Legs. (Continued) - - -	119
LECTURE XIV.	
On Corns and Bunions - - - - -	126
LECTURE XV.	
On Polypi of the Nose - - - - -	135
LECTURE XVI.	
On Diseases which are sometimes mistaken for Polypi of the Nose -	143
LECTURE XVII.	
Non-malignant Tumours of the Tongue.—Paralysis, its Causes, and the different Forms of it - - - -	151
LECTURE XVIII.	
Paralysis. (Continued) - - - - -	160
LECTURE XIX.	
Extraction of Foreign Bodies - - - - -	167
LECTURE XX.	
Extraction of Foreign Bodies. (Continued) - - - - -	175
LECTURE XXI.	
Fistula in Ano - - - - -	184
LECTURE XXII.	
Fistula in Ano. (Continued) - - - - -	193
LECTURE XXIII.	
On Fatty or Steatomatous Tumours - - - - -	199
LECTURE XXIV.	
On Sero-Cystic Tumours of the Breast. - - - - -	206

## LECTURE XXV.

	PAGE
Scirrhus of the Breast . . . . .	214

## LECTURE XXVI.

On the Administration of Mercury in Syphilis . . . . .	223
--	-----

## LECTURE XXVII.

Local Nervous Affections . . . . .	232
------------------------------------	-----

## LECTURE XXVIII.

Various Forms of Local Hysterical Affections . . . . .	247
--	-----

## LECTURE XXIX.

Pathology of Hysteria.—Treatment of Local Hysterical Affections . . . . .	260
---	-----

## LECTURE XXX.

On Diseases of the Hip-joint . . . . .	271
--	-----

## LECTURE XXXI.

On Diseases of the Hip-joint. (Continued) . . . . .	280
---	-----

## LECTURE XXXII.

On the Treatment of Diseases of the Hip-joint . . . . .	290
---	-----

## LECTURE XXXIII.

On Tic Douloureux or Facial Neuralgia . . . . .	298
---	-----

## LECTURE XXXIV.

On Hemorrhoids . . . . .	306
--------------------------	-----

## LECTURE XXXV.

On Hemorrhoids, (continued.) On Prolapsus of the Rectum. On Excrescences of the Rectum . . . . .	314
--	-----

## LECTURE XXXVI.

On Preternatural Contraction of the Sphincter Ani. On Ulcer on the Inside of the Rectum. On Stricture of the Rectum . . . . .	322
---	-----

## LECTURE XXXVII.

On an Unusual Form of Stricture of the Rectum. Malignant Diseases of the Rectum. On Recto-Vaginal Communication . . . . .	330
---	-----

LECTURE XXXVIII.

On Diseases of the Maxillary Antrum . . . . .	PAGE 336
---	-------------

LECTURE XXXIX.

On Encysted Tumours . . . . .	345
-------------------------------	-----



# LECTURES ON SURGERY,

DELIVERED AT

ST. GEORGE'S HOSPITAL,

BY SIR BENJAMIN BRODIE, BART., F.R.S., &c.

---

## LECTURE I.

### INTRODUCTORY DISCOURSE.

GENTLEMEN.—A large proportion of those whom I now address are assembled for the first time, for the purpose of pursuing their studies in the Medical School of this Hospital; and their feelings on this occasion are not unknown to me; for, to a great extent at least, they must be such as I myself experienced, when long ago I was situated as they are at the present moment. Transplanted, perhaps, from some small community into this great city; the largest, the most populous, the richest that ever flourished; jostled in crowded streets; surrounded by palaces; where the high-born and the wealthy; where the most eminent statesmen; the most distinguished in literature, in sciences, and arts, and in every other human pursuit, are, as it were, fused into one mass to make the London world: contemplating the novel scene around you, but being not yet identified with it; it cannot be otherwise than that a sense of loneliness should come upon you in the intervals of excitement; that you should say, “What am I in the midst of so much bustle, activity, and splendour? who will be at the pains to watch the course of a medical student? who will know whether I am diligent or idle, or bear testimony in after-years to the correctness or irregularity of my conduct during this brief period of my life?”

But let not your inexperience lead you into so great an error. Even now, when you believe that no one heeds you, many eyes are upon you. Whether you are diligent in your studies; striving to the utmost to obtain a knowledge of your profession; honourable in your dealings with others; conducting yourselves as gentlemen; or whether you are idle and inattentive; offensive in your manners; coarse and careless in your general demeanour; wasting the precious hours, which should be devoted to study, in frivolous

and discreditable pursuits; all these things are noted to your ultimate advantage or disadvantage; and in future days, you will find that it is not on accidental circumstances, but on the character which you have made as students, that your success as practitioners, and as men engaged in the business of the world, will mainly depend. By the time that you are sufficiently advanced for your lot in life to be finally determined, the course of events will have wrought mighty changes among us. Of those who are now the most conspicuous in station, and the most influential in society, many will have altogether vanished from the scene of their former labours; and others will be to be found only in the retirement of old age. Younger and more active spirits, your own cotemporaries, and those a little older than yourselves, will have occupied their places: and the tribunal, by which you will be judged of hereafter, will be composed of a different order of individuals from those to whose favourable opinion you would at this moment be most anxious to appeal.

But I should be sorry if I were misunderstood as representing this to be the only or the principal motive which should lead you to avail yourselves to the utmost of your present opportunities. The knowledge which you will obtain as students, is to be the foundation of the whole of that, which many years of professional practice will afford you afterwards; and, if the foundation be insecure, the superstructure will be of little value. However imperfect may be the sciences belonging to the healing art, to bring them even to their present state has been the work of centuries. The industrious student may enter on the active pursuit of his profession with a scanty store of knowledge compared with that of which he will find himself possessed twenty years afterwards: but he is in the direct road to greater knowledge. He has the advantages of principles which have been established by the labours of many preceding generations; and this will render the subsequent efforts of his life comparatively easy. But he who has neglected his education must, as it were, begin anew; and he will find, when it is too late, that no combination of energy and talent will enable him to rise to the level of those who were, in the beginning, his more diligent competitors. He will, moreover, labour under another and still greater disadvantage. One business of education is to impart knowledge; but another, and still more important one, is to train the intellectual faculties. To acquire the habit of fixing your attention on the object before you; of observing for yourselves; of thinking and reasoning accurately; of distinguishing at once that which is important from that which is trivial; all this must be accomplished in the early part of life, or it will not be accomplished at all: and the same remark is not less applicable to qualities of another order. Integrity and generosity of character; the disposition to sympathize with others; the power of commanding your own temper; of resisting your selfish instincts; and that self-respect, so important in every profession, but especially so in our own profession, which would prevent you from doing in secret what you would not do before all the world; these things are rarely



acquired, except by those who have been careful to scrutinize and regulate their own conduct in the very outset of their career.

It cannot be too often brought before you, nor too earnestly impressed upon your minds, that being, in the present stage of your journey through life, in a great degree released from responsibility to others, your responsibility to yourselves is much increased. Your future fortunes are placed in your own hands; you may make them, or mar them, as you please. Those among you, who now labour hard in the acquirement of knowledge, will find that they have laid in a store which will be serviceable to them ever afterwards. They will have the satisfaction of knowing that, in practising their art for their own advantage, they are, at the same time, making themselves useful to their fellow-creatures: when they obtain credit, they will feel that it is not undeserved; and a just self-confidence will support them even in their failures. But for those who take an opposite course, there is prepared a long series of mortifications and disappointments. Younger men will be placed over their heads. Even where their judgment is correct, they will themselves suspect it to be wrong. With them, life will be a succession of tricks and expedients; and if, by any accident, they should find themselves elevated into situations for which they have not been qualified by previous study, they will find that this is to them no good fortune; the world will always compare them with better persons, and the constant anxiety to satisfy others, and to keep themselves from falling, will destroy the comfort of their existence. Whether it be in our profession or any other, I know of no individuals much more to be pitied than those whom fortuitous circumstances have lifted into places, the duties of which they are not well qualified to perform.

I trust that none among you will suspect that these observations are founded on any theoretical view of the subject, or that it is merely as a matter of course that I thus address myself to younger men. I wish to see those who are educated in this hospital, an institution to which I am indebted for so many advantages which I have possessed in life, go forth into the world useful and respectable members of an honourable and independent profession. I wish to see them obtain success, and worthy of the success which they obtain: and having now had a long experience in the history of medical students, and having been careful to watch their progress through life, I am satisfied that the only method by which this can be accomplished, is that which I have pointed out: and, I may add, that I have never known an individual, who thus applied himself seriously and in earnest to his task, whose exertions were not rewarded by a reasonable quantity of professional success—such as would be sufficient to satisfy any but an inordinate ambition. Beyond this, your lot in life may indeed be influenced by circumstances not altogether under your control. Accident may place one individual in a situation more favourable, and another in a situation less favourable to his advancement. One may have the advantage of greater physical powers, enabling him to undergo the same exertion with less fatigue, and to preserve his energies unimpaired, where those of another would be

exhausted; and, in like manner, one may have the advantage of powers of intellect which are denied to his competitors.

With respect, however, to the last-mentioned subject, I have no doubt that the difference is not so great as you, or the world generally, may suppose it to be. There are few persons who have not some talent, which, if properly cultivated, may be turned to good account, and he who is deficient in one kind of talent may excel in another. But the greatest talents may be wasted. They may be blighted by indolence; they may be used for base or improper purposes; or, they may be directed to too great a variety of objects. It is well, indeed, for you to have some diversity of study, so as to keep all your mental faculties in wholesome exercise; so that you may not be without some sympathies with those around you, and that you may avoid the evils of narrowmindedness and prejudice; still, whoever would be really useful in the world, and be distinguished in it, must act to a great extent on the principle of concentration, keeping one object especially in view, and making his other pursuits subservient to it. And let no one sit down in despair and say, "I have not the abilities of my neighbours, and it is needless for me to exert myself in competition with them." If you would know what your own powers are, you must try to use them. Industry is necessary to their development; and the faculties of the mind, like those of the body, go on improving by cultivation. It is impossible for you to form a right estimate of yourselves in early life, nor can you be rightly estimated by others. The self-sufficient, who do not keep before their eyes an ideal standard of perfection, who compare themselves only with those who are below them, will have an advantage with inexperienced and superficial observers; but I must say that I have never known any one to do any real good in the world, or obtain ultimately a bright reputation for himself, who did not begin life with a certain portion of humility. The greatest men are humble. Humility leads to the highest distinction, for it leads to self-improvement. It is the only foundation of a just self-confidence. Study your own characters; endeavour to learn, and to supply your own deficiencies; never assume to yourselves qualities which you do not possess; combine all this with energy and activity, and you cannot predicate of yourselves, nor can others predicate of you, at what point you may arrive at last. "Men," says M. Guizot, "are formed morally as they are formed physically. They change every day. Their existence is always undergoing some modification. The Cromwell of 1650 was not the Cromwell of 1640. It is true that there is always a large stock of individuality: the same man still holds on: but how many ideas, how many sentiments, how many inclinations have changed in him! What a number of things he has lost and acquired! Thus at whatever moment of his life we may look at a man, he is never such as we see him when his course is finished." These eloquent and philosophical remarks, made by the present Prime Minister of France, are not more applicable to those who are engaged in politics, than they are to those who are engaged in the pursuits of private life, and to none more than to yourselves.



It is not my intention on this occasion to give you any advice as to the detail of your studies. It is best that this should be left to your respective teachers. They will tell what lectures you should attend first, what afterwards; what hours you should devote to anatomy, what to the hospital practice; where you should take notes and where you need not do so. There are, however, some general suggestions, which I may venture to offer, without exceeding those bounds to which I wish that my observations should be restricted, and without taking on myself those duties which more properly belong to others.

The first effect usually produced on the mind of a medical student, is that of being bewildered by the number and variety of subjects to which his attention is directed. In one class-room he is instructed in chemistry; in another in the *materia medica*. In one place, the structure of the human body is unravelled before him; and in another, he contemplates the interminable varieties of disease, and the methods which are adopted for their cure. He sees none of the relations by which these different investigations are combined together, so as to form one science. He has the opportunity of learning a great number of facts, but for the most part they are insulated, and independent of each other; he can reduce them to no order, and the want of a proper arrangement and classification makes the recollection of them difficult and uncertain. But this is not peculiar to medical students. The same difficulty occurs to every one, who enters for the first time on an extensive field of research: and they must, indeed, be very indolent, and very unfit for the business of life, who suffer themselves to be disheartened by it. Have patience for a while; keep your attention fixed on the matters which are brought before you, and after every lesson that you have received, or at the close of every day, endeavour to recollect what you have seen and heard; and in the course of a short time there will be an end of the confusion; the mist which there was before you will have passed away; where every thing had been obscure, there will be a clear landscape; and the studies, which, when you were first initiated in them, were dry and irksome, will become interesting and agreeable. As you acquire a more extensive knowledge of individual facts, it must necessarily happen that the relations which they bear to each other will become more distinctly developed. This, however, does not seem to be the whole explanation. I cannot well understand what I have observed to happen in myself, without supposing that there is in the human mind a principle of order which operates without the mind itself being at the time conscious of it. You have been occupied with a particular investigation; you have accumulated a large store of facts; but that is all: after an interval of time, and without any further labour, or any addition to your stock of knowledge, you find all the facts which you have learned in their proper places, although you are not sensible of having made any effort for the purpose.

In the commencement of your studies, you will, at first, be altogether occupied in the acquirement of knowledge communicated to you by others. You will learn from lectures and from books what

others have learned before you, and what is there taught you must take for granted to be true. A student may be very diligent and industrious, and yet go no farther than this through the whole period of his education. He may become an accomplished person; full of information; a walking cyclopædia; and, at the end of his labours, may obtain the reputation of having passed through his examinations with the greatest credit. All this is as it should be, and those who think that to pass a creditable examination is the only object of their studies, will be quite satisfied with the result. But is it sufficient in reality? Are no qualifications required besides those, which are wanted for your examination? It is far otherwise, and no one will rise to be conspicuous in his profession, nor even to be very useful in it, whose ambition is thus limited. The descriptions of disease, and the rules of treatment, are simplified in lectures and in books; and if not so simplified, they could not be taught at all. But you will find hereafter, that disease is infinitely varied; that no two cases exactly, and in all respects, resemble each other, and that there are no exact precedents for the application of remedies. Every case that comes before you must be the subject of special thought and consideration; and from the very beginning of your practice, although what is taught in lectures and books may render you great assistance, you will be thrown in no small degree, on your own resources. There is no profession in which it is more essential that those engaged in it should cultivate the talent of observing, thinking and reasoning for themselves, than it is in ours. The best part of every man's knowledge is that which he has acquired for himself, and which he can only to a limited extent communicate to others. You will spend your lives in endeavouring to add to your stores of information; you will, from day to day, obtain a clearer and deeper insight into the phenomena of disease; you will die at last, and three-fourths of your knowledge will die with you; and then others will run the same course. Our sciences are, indeed, progressive; but how much more rapid would their progress be, if all the knowledge that experience gives, could be preserved. Now, these remarks are of practical importance to you all. You should begin to act upon them at an early period of your studies. Make out every thing relating to the structure of the body for yourselves. Do not altogether trust to what is told you in lectures and books, but make the knowledge your own by your own labours. Observe for yourselves the phenomena of disease, and the only way of doing this in an efficient manner is to take your own written notes of cases. I say, *your own* notes, for copying those taken by others, as far as the improvement of your own mind goes, is nearly useless; and when you have taken notes in the morning, write them out in the evening, and think of them, and compare them with one another, and converse on them with your fellow-students, and all this will render the investigation of disease a comparatively easy matter afterwards.

In these latter observations, I have anticipated some of those which I had intended to address especially to those among you who are on the point of offering themselves to the public as candidates



for practice. It would be a fatal error for you to suppose that you have obtained the whole, or even any large portion of the knowledge which it is necessary for you to possess. You have not done much more than learn the way of learning. The most important part of your education remains;—that which you are to give yourselves, and to this there are no limits. Whatever number of years may have passed over your heads, however extended may be your experience, you will find that every day brings with it its own knowledge; you will still have something new to seek, some deficiencies to supply, some errors to be corrected. Whoever is sufficiently vain, or sufficiently idle, to rest contented, at any period of his life, with his present acquirements, will soon be left behind by his more diligent competitors. By the young practitioner, every case that he meets with, should be carefully studied; he should look at it on every side; and he should, on all occasions, assist his own inquiries by a reference to his notes of lectures and to books.

But it will rarely happen, that in the beginning of a professional life, even the most diligent and the most successful person will be able to occupy the whole of his time with strictly professional pursuits; and the question must arise, "What is he to do with his leisure hours?" A most important question, indeed, it is; for the character and the lot of the individual must depend, in a very great degree, on the way in which such leisure hours are employed. If altogether devoted to what, dull as they generally are, the world calls amusements, these do but spoil the mind for better things; and if you trust to such desultory occupations as accident may bring, the result will be no better. You will be the victims of melancholy and *ennui*; and unreasonable despondency with respect to your future prospects will oppress your faculties, and deprive you of that spirit, and of those energies, which are absolutely necessary to your success. And these evils are easily avoided. How many branches of knowledge are there, which, if not directly, are indirectly useful in the study of pathology, medicine, and surgery! and all general knowledge, whether of literature, or of moral or physical science, tends to expand the intellect, and to qualify it better for particular pursuits. There is no excuse for a young professional man who does not devote some portion of his time to the general cultivation of his mind. His own profession have a right to expect it of him, and he owes it to his own character. Ours is no political profession. It is one belonging altogether to private life. Your place in society depends, not on your being mixed up with parties and factions; not on circumstances external to yourselves, but on your own qualities; you make it for yourselves. You wish, I conclude, to be received in society as being on a footing with well-educated gentlemen. But, for this purpose, you must be fitted to associate with them; and this cannot be the case, if you know nothing of those matters which are the general subject of conversation among them. The world care little about those distinctions, which, for the sake of a more convenient division of labour, we make among ourselves; and a well-conducted and well-informed man will be just as well received

in society if he belongs to one grade of the profession as if he belongs to another. It is very much to the discredit of the great medical institutions in this country, that, except in some few instances, they have not given even an indirect encouragement to the obtaining a good general education, and, in one instance, the legislature have actually done their best to throw an impediment in the way. I know that many, nevertheless, have not been without this advantage; but they may improve themselves still further, and others may, in a great degree, make up for what they have lost, by a right disposal of their time in the early part of their practice.

It cannot be difficult for any one endowed with an ordinary degree of intelligence and curiosity, to fill up his vacant hours with pursuits that are no less interesting than useful. But your profession itself, from the moment you are established as practitioners, will possess a new interest very different from that which belonged to it during the period of your pupilage. Hitherto you have been acting under the direction of others, and on their responsibility. Hereafter, you will have to act for yourselves, and on your own responsibility. Whatever credit is to be obtained, it will be your own; and, on the other hand, where blame is due, you may be sure that no one will volunteer to divide it with you. In every case that comes under your care, you will have to account to your own conscience for having done the very best that it was in your power to do for your patients' welfare: you will have to account also to others; to your own immediate circle of friends and patients; to society at large; to all those whose favourable opinion of your character and conduct is necessary to your success in life. You will find yourselves surrounded by duties, responsibilities and anxieties, which were unknown to you as students. He who has not a full sense of the responsibilities which it involves, is unfit for our profession; and the anxieties of a professional life are but a wholesome stimulus to diligence and exertion. I say this, supposing them to be kept within reasonable bounds. You may allow your thoughts to dwell on subjects of anxiety until an entirely opposite effect is produced, and life is rendered miserable, and the mind enervated. Such a morbid sensibility is as mischievous on the one hand as a want of just sensibility is on the other. You must be careful to train the mind so that it may not fall into either of these extremes. Make every exertion to obtain knowledge, and to use it properly; and then keep it in your recollection that there are bounds to human knowledge, and to human powers; and that, in the exercise of our art, we cannot do all that is required of us; for, if we could, pain and misery would be banished from the world, man would be immortal, and the order of the universe would be disturbed. Do not begin life with expecting too much of it. No one can avoid his share of its anxieties and difficulties. You will see persons who seem to enjoy such advantages of birth and fortune, that they can have no difficulties to contend with, and some one of you may be tempted to exclaim, "How much is their lot to be preferred to mine!" A moderate experience of the world will teach you not to be deceived



by these false appearances. They have not your difficulties, but they have their own; and those in whose path no real difficulties are placed, will make difficulties for themselves; or, if they fail to do so, the dulness and monotony of their lives will be more intolerable than any of those difficulties which they may make, or which you find ready made for you. Real difficulties are much to be preferred to those which are artificial or imaginary: for, of the former, the greater part may be overcome by talent and enterprise, while it is quite otherwise with the latter. Then, there is no greater happiness in life than that of surmounting difficulties; and nothing will conduce more than this to improve your intellectual faculties, or to make you satisfied with the situation which you have attained in life, whatever it may be.

To be prepared for difficulties; to meet them in a proper spirit; to make the necessary exertion when they occur; all this is absolutely necessary to your success, whatever your profession or your pursuit in life may be. No one can be useful to others, or obtain real credit for himself, who acts on any other rule of conduct. But it is more easy to lay down the rule than to follow it, unless the mind be disciplined for the purpose from the beginning. The natural tendency of mankind is to indolence; to shrink from difficulties; to try to evade them rather than to overcome them. Never yield to this disposition on small occasions; and thus you will acquire a habit which will enable you to do what is wanted on great occasions, without any violent or painful effort. It is by neglecting their conduct in the smaller concerns of life that so large a portion of mankind become unequal to the performance of their higher and more important duties. If you would know a man's character, look at what he does in trifles, and, for the most part, you will be able to form no inaccurate notion of what he would be in greater things.

I have heard the following anecdote of a distinguished individual who afterwards rose to the highest honours of the legal profession. For several years, in the early part of his life, he had been wholly without professional employment. One term went, and another came; but that which brought briefs to others brought none to him. Still he was always at his post, and, disappointed but not discouraged, he continued to labour, laying up stores of knowledge for his future use. At last, it happened that he was employed as a junior counsel in a cause of great importance. The evening before the cause was to come on in the court in which he professed to practice, the senior counsel, or (as he is technically called) his leader, was seized with a sudden illness. No one of the same standing could be found to supply his place; and late in the evening the solicitor went, probably unwillingly enough, to the junior counsel, and represented to him under what circumstances he was placed, and that he must trust to him alone. All the hours of the night were devoted to the task. The knowledge which the poor obscure student had acquired now turned to good account. On the following day he gained such credit that his reputation was established; and from this time his elevation was rapid. Now this may perhaps be regarded as an extreme

case, but something like it must happen to every one who attains a high station afterwards. There are few so indolent that they will not make an exertion for the sake of an immediate reward; but it is a poor spirit that can accomplish no more than this. The knowledge which you acquire to-day may not be wanted for the next twenty years. You may devote whole days and nights to study, and at the end of the year may not be aware that you have derived the smallest advantage from it. But you must persevere nevertheless; and you may do so in the full confidence that the reward will come at last. There is nothing in which the difference between man and man is more conspicuous than it is in this; that one is content to labour for the sake of what he may obtain at a more advanced period of his life, while another thinks that this is too long to wait, and looks only to the immediate result. At first, the former may seem not only to make no greater progress than the latter, but even to be the more stationary of the two. But wait, and you will find a mighty difference at last. You cannot judge from the first success of a professional person what his ultimate success will be: and this observation applies especially to those who contend for the greater prizes, not only in our profession, but in the majority of human pursuits.

A thorough determination to attain an object is the first step towards its attainment.

If you wish to advance yourselves in the way of life which you have chosen, you must persevere in one undeviating course, wandering neither to the right nor to the left, or making such excursions as you make into other regions of knowledge subservient to your main pursuit. What is called a life of pleasure is incompatible with a life of business; and those who have a more noble ambition, who love knowledge for its own sake, must learn to limit their ambition, and not waste their talents or their reputation by grasping at too much. Those who would excel in all things will excel in nothing. They may excite the wonder of the educated and uneducated vulgar: but those who are the best qualified to judge will detect their weakness, and smile at their superficial acquirements; and, after all their labour, they may die at last, and leave the world no better than it would have been if they had never existed.

And here I can conceive that some among you may say, "Is there any thing which the medical profession can bestow, which will prove a compensation for the labour, the exertion, and the sacrifices which it entails upon us? Is it better to continue in it, or to turn aside to some other pursuit or employment? Indeed, it is well that this question should be thoroughly considered before it is too late; for, as far as I have seen the world, nothing is more ruinous than that unsettled state of mind which would lead you, when you are fairly embarked in one profession, to grow dissatisfied with it, and desert it for another. There are, I know, some remarkable instances in which the result was different; but it would be dangerous to quote these as precedents which you might safely follow, or to make the



example of a peculiar genius, like that of Erskine, the foundation of a rule for ordinary men.

I know of no profession that is worthy of being pursued which does not require as much exertion, as much labour, as many sacrifices, as that in which you are engaged; and I also know of none in which he who has the necessary qualifications is more sure of being rewarded for his labours. If it be your ambition to obtain political rank, or to have that sort of reputation which a political life affords, you will be disappointed; for, as I have already observed, our profession has nothing to do with politics. It belongs to private life; and the only other association which it has is that of science. There are few departments of either physical or moral science with which it is not, in a greater or less degree, connected; and there are some with which the connection is so intimate, that the study of them may be almost regarded identical. The study of anatomy and physiology is a necessary preliminary to that of pathology; and the former cannot be understood by any one who has not some knowledge of the laws of mechanics and optics. Animal chemistry is daily becoming more essential to physiology, and is even beginning to illuminate some of the more obscure parts of the science of disease. You are to look, not to political rank, but to the rank of science. No other rank belonged to Newton or Cavendish, to Hunter or Davy; yet their names will live in distant ages; and they will be regarded as benefactors of the human race, when the greater number of their more noisy cotemporaries, if remembered at all, are remembered without respect.

We are informed by his son-in-law and biographer, that, when Mr. Pott was seized with his last illness, he said, "My lamp is nearly extinguished: I hope that it has burned for the benefit of others." He addressed himself to his own family, and died on the following day; and, under such circumstances, it would be absurd to suppose that this was said merely with a view to produce an effect, or that these were any but his real and heartfelt sentiments. Undoubtedly it must be a great satisfaction at the close of life, to be able to look back on the years which are passed, and to feel that you have lived, not for yourselves alone, but that you have been useful to others. You may be assured, also, that the same feeling is a source of comfort and happiness at any period of life. There is nothing in this world so good as usefulness. It binds your fellow-creatures to you, and you to them; it tends to the improvement of your character; and it gives you a real importance in society much beyond what any artificial station can bestow. It is a great advantage to you, that the profession in which you are about to enter, if promptly pursued, is pre-eminently useful. It has no other object; and you cannot do good to yourselves without having done good to others first. Thus it engenders good feelings and habits; and I know of no order in society who, taken as a whole, are more disinterested, or more ready to perform acts of kindness to others, than the members of the medical profession.

Usefulness is the best foundation of independence. There are

some ways of life in which it is common for individuals to obtain unmerited advancement by the patronage of others. But you must be your own patrons. Your knowledge, your skill, your good character, will constitute your fortunes. Your dearest friends will feel that they are not justified in entrusting the lives and comfort of themselves and their families to your care, unless they have reason to believe that it is safe and prudent for them to do so, and that they can do nothing better; and so far, you are no more under an obligation to those who consult you than a landlord is under an obligation to the tenant of his house or land. Those who are well disposed towards you cannot help you unless you first help yourselves. But let me not be mistaken. It is well to be conscious that you are to rely on yourselves alone; and that even if you were base enough to cringe and stoop for the purpose of obtaining the favour of others, you could derive no permanent advantage from it. This is the independence which I mean; and not that proud and misanthropical independence which rejects the feeling of all obligations to others. Whoever gives you his good opinion, whatever his station in life may be, is, in some measure to be considered as conferring an obligation on you, and deserves to be regarded by you with kindness in return. Mankind are bound to each other by mutually receiving and conferring benefits. You cannot live in the world, and, at the same time, live apart from it, and say, "I will owe no thanks to others; for whatever advantages I may obtain I will be indebted to myself alone." All those who do justice to your real or supposed merits have a claim on your gratitude. As others will lean upon you, so you must be content to lean upon them. On no other terms can you form a part of the great community of mankind.

There are some employments which bring those who are engaged in them in contact more especially with the bad qualities of mankind; their pride, their arrogance, their selfishness, their want of principle. It is not so with your profession. All varieties of character will be thrown open to your view; but, nevertheless, you will see on the whole the better sides of human nature; much, indeed, of its weakness, much of its failings, much of what is wrong; but more of what is good, in it. Communicating, as you will probably do, with persons of all conditions, you will be led to estimate others according to their intrinsic qualities, and not according to those circumstances which are external to themselves: you will learn, that of the various classes of which society is composed, no one is pre-eminently good, or pre-eminently bad: and that the difference is merely this, that the vices and virtues of one class are not exactly the vices and virtues of another. You will have little sympathy with those prejudices which separate different classes from each other; which cause the poor to look with suspicion on the rich, and the rich to look down upon the poor; and while you cannot fail to perceive the great advantages which education gives, you will acknowledge, that, to be well educated, is not the necessary result of having the opportunity of education; that a bad education is worse than none at all; and that what are called the uneducated classes



present many examples, not only of the highest religious and moral principles, but of superior intellect, and of minds stored with valuable knowledge.

All this is good for your own minds; but it is a still greater advantage to you, that a good moral character is not less necessary to your advancement in the medical profession than skill and knowledge. Nor is it merely a strict observance of the higher rules of morality that is required. You must feel and act as a gentleman. I can find no word so expressive of what I mean as this. But let there be no misunderstanding as to who is to be regarded as a gentleman. It is not he who is fashionable in his dress, expensive in his habits, fond of fine equipages, pushing himself into the society of those who are above himself in their worldly station, that is entitled to that appellation. It is he who sympathizes with others, and is careful not to hurt their feelings even on trifling occasions; who, in little things as well as in great, observes that simple but comprehensive maxim of our Christian faith, "Do unto others as you would they should do unto you;" who, in his intercourse with society, assumes nothing which does not belong to him, and yet respects himself; this is the kind of gentleman which a medical practitioner should wish to be. Never pretend to know what cannot be known; make no promises which it is not probable that you will be able to fulfil; you will not satisfy every one at the moment, for many require of our art that which our art cannot bestow; but you may look forward with confidence to the good opinion of the public, which time will bring as your reward, and to act otherwise is to put yourself on a level with charlatans and quacks.

To obtain such competency as will place yourselves and your families above the reach of want, and enable you to enjoy such of the comforts and advantages of life as usually fall to the lot of persons in the same station with yourselves, is, undoubtedly, one of your first duties, and one of the principal objects to which your attention should be directed: but, nevertheless, let it never be forgotten that this forms but a part, and a small part, of professional success. If, indeed, money were the only object of life; if to enjoy the respect of others, and the approbation of your own conscience; to feel that you are doing some good in the world, and that your names will be held in esteem when you are gone out of it; if these things were to form no part of your ambition, then, indeed, you might possibly have your ambition gratified by pursuing a different course from that which I have pointed out. You might be unscrupulous in your promises; undertaking to heal the incurable; making much of trifling complaints for your own profit; claiming credit where none belongs to you; and you might try to advance yourself by what is often called a knowledge of mankind, or a knowledge of human nature. But how is that term misapplied! Knowledge of human nature, indeed! This is the most difficult, the most interesting, the most useful science in which the mind of man can be engaged. Shakspeare knew human nature, as it were, by instinct. It has been the favourite study of the greatest men; of Bacon, of Addison, of John-

son. But of those who are commonly spoken of in the world as knowing human nature, the majority are merely cunning men, who have a keen perception of the weak points of other men's characters, and thus know how to turn the failings of those who probably are superior to themselves in intellect, to their own account.

Generous feelings belong to youth, and I cannot suppose that there is a single individual present, who would not turn away with disgust from any advantages which were to be obtained by such means as these. Your future experience of the world, if you use it properly; will but confirm you in these sentiments; for you will discover that of those who strive to elevate themselves by unworthy artifices, it is only a very small proportion who obtain even that to which they are contented to aspire; and that the great majority are altogether disappointed, living to be the contempt of others; and especially so of their own profession, and, for the most part, ending their days in wretchedness and poverty.

There is only one other subject to which, in concluding this address, I think it right to claim your attention. You have duties to perform among yourselves, one to another. There is no one among us who does not exercise an influence, to a greater or less extent, over those with whom he associates, while he is influenced by them in return. In whatever orbit a man moves, he carries others with him. If the vicious have their followers, those who set a bright example of honour and integrity have their followers also. In like manner, industry in one leads to industry in another, and the mind which is imbued with the love of knowledge cannot fail to communicate some portion of that holy inspiration into the minds of others. These, which are among the higher responsibilities of life, have begun with you already. The course which you individually may pursue, does not concern yourselves alone. While you are making your own characters, you will help to make the characters of others. Let this consideration be ever present to your thoughts. It will give you an increased interest in life. It will extend your sympathies with those around you; and it will afford you an additional stimulus to persevere in those honourable exertions, for which you will, at no great distance of time, be rewarded by the respect of the world, and esteem of your own profession.



## LECTURE II.

## ILLUSTRATIONS OF SOME IMPORTANT CIRCUMSTANCES CONNECTED WITH OPERATIVE SURGERY.

THERE is no department of the healing art in which there is so much to interest or to excite both our own profession and the public, as there is in operative surgery. In the greater number of cases of disease treated by other means, it is difficult to say how much of the success obtained belongs to the remedies employed, and how much to the natural powers of the patient's constitution. But it is entirely different in those cases that are the subjects of operations. Recourse is had to this mode of treatment only when nature can go no further; and an operation, so far from being the direction of a natural process to a safe result, is, for the most part, an abrupt and rude interference with whatever nature is about. If a cure arise from an operation, it is to be attributed to that, and to that only: and thus it happens that some of the most splendid results obtained in the healing art are those which are claimed by the operating surgeon.

But an operation, while it may do good, may also be productive of evil. A man has a stone in the bladder; he is suffering torture; he has nothing but a frightful death to which he can look forward. As the least of two evils, he is contented to submit to the operation of lithotomy: and, it may be, that in the brief space of three minutes he is placed in a situation of perfect comfort, and that in forty-eight hours you are able to declare with confidence that his life is perfectly safe. A man may have a disease in the knee-joint, with carious bone and abscesses; he may be worn out by pain, by perspirations, sleepless nights, and other symptoms of hectic fever. You amputate the limb; and even on that very night he may sleep soundly; there may be no more perspirations, and in a week he may be gaining flesh, and present the aspect of health. But then, on the other hand, there are other cases, in which the patient, after lithotomy, may die within forty-eight hours, although he might have lived—in misery, it is true—had he been let alone, for a year or longer. So, in the case of amputation for a diseased knee-joint, the patient, instead of recovering, may die in the course of a few days, and very much sooner than he would have done had not an operation been resorted to.

This double result of operations adds to the interest which this part of surgery possesses, and to the responsibility which is entailed on those who practise it. But what adds still more both to the one and to the other, is this—that it is not only great operations, such as lithotomy, and the amputation of the thigh, that are attended with risk. A man died in this hospital from the consequences of the sting of a bee; and another died, in this hospital also, from those of the bite of a leech. A patient died in consequence of a wound, not an

inch in length, on the inside of the knee, made for the purpose of dividing the saphena vein. I have known a patient die from erysipelas that followed the simple operation of cupping; and there have been not a few instances of fatal venous inflammation supervening after a common bleeding in the arm. A lady had a small encysted tumour on her head not larger than a pea. A surgeon who was at that time (for what I am speaking of was many years ago) an eminent man in his profession, removed the tumour, but did it imperfectly. The disease returned, and another surgeon, at that time in large practice also, removed it more effectually. The patient died from erysipelas of the scalp. So others have died from the removal of piles, and other apparently trifling operations.

Considering these different results that are obtained in operative surgery, you cannot but feel how essential it is that you should do every thing that can be done to make yourselves masters of whatever belongs to this part of your profession; that you should study the subject of each individual operation in its most minute circumstances; that you should be well acquainted with the anatomy of all the parts concerned in it; and that you should learn to be dexterous in the use of your knife, and of other instruments employed. You will also perceive that even these qualifications will not be in themselves sufficient. The surgeon who is engaged in operations must attend in all respects to his mode of life; and especially he should be of those moderate and temperate habits without which there can be no steady hand, no accurate eye; without which, also, there cannot be that activity and energy of mind, and readiness of conduct, which are so necessary to enable him to meet the unforeseen difficulties that will continually arise in the greater, and sometimes even in the smaller operations of surgery.

Some things to which you have to attend in an operation may be considered as special—belonging to that particular operation, and not to others. In operating for strangulated hernia, if you divide the stricture in one direction, you may wound the epigastric artery; while if you divide it in another, no such risk is incurred. In the operation of lithotomy, if you make your incision too extensive, you may cut through the whole of the prostate gland, and that is almost certain death to the patient.—There are other things which belong to no operation in particular, but to operations generally, and it is to these last that I wish more particularly to direct your attention in the present lecture. You must not, however, lose sight either of the one or of the other if you would be accomplished operators.

An accomplished operator! That term may be used in various senses; but I will tell you, before I proceed further, in what sense I use it. I apply it, not to him who looks at his watch to see in how short a space of time an operation may be completed; nor to him who, during an operation, is putting himself in the situation of those who are looking on, considering what they will say, and anxious to appear dexterous in their eyes. According to my notions, he only is an accomplished operator who, before he engages in an operation, looks at all the consequences, both good and bad, which may ensue;



and earnestly endeavours to lay his plans so that there may be as great a chance as possible of the former being obtained, and of the latter being avoided; and who, while actually engaged in an operation, thinks neither of himself nor of the bystanders, nor allows any question to arise in his mind except as to what he should do to bring the case ultimately to a safe termination with the least possible distress to the patient.

Let me exhort you never to slur over a single case, nor proceed to the smallest operation, without having well considered what accidents may happen, what evil may follow, what degree of danger may ensue; and, having done so, let me advise you further, that you should, as far as you can, make the patient acquainted with all that you know upon the subject: or if he be not in a state in which he can judge for himself, then that you should make the same explanation to his friends. That you should do so is but an act of justice to your patient. It may be quite right for a man to run a risk by going through an operation, but it is not right that he should do so without knowing it, or at any rate not without his friends knowing it. But it is also an act of justice to yourselves. A surgeon has no business to take all the responsibility of an operation upon himself. The friends should never have the opportunity of turning round upon him afterwards, and saying, "you said there was no danger, and here my wife, my husband, or my friend, is dead." In some of the greater operations, indeed, there is not much explanation of this kind necessary, because the world very well know that where you perform lithotomy or amputate the thigh there is a certain degree of hazard. But do not overlook the risk even of the smaller operations. If I am asked whether there be any danger, I never answer that there is none: I say, perhaps, what I have said to you just now, that I have known a person to die in consequence of the sting of a bee, and the bite of a leech; but then I add, that the danger is so small that it is not to be put in comparison with that which will arise from allowing a disease to remain, which is itself a source of danger: or if the disease requiring the operation be one of no serious character, then I may observe, that the patient must decide for himself, whether it be not worth his while to incur a very small risk for the sake of the relief which the removal of the disease will give him. We must all be contented to incur such risks as these in many of the common concerns of life. You may go out on horseback, or on the top of a stage-coach, and may be thrown off and killed; you may be smashed on a railroad, or drowned when on board a steam-vessel. As these very trifling hazards are to be overlooked under other circumstances, so they are to be disregarded in the smaller operations of surgery. State all this to the patient, or his friends, in the way in which I have now stated it to yourselves. It will be a great comfort, and afford much peace of mind in the arduous profession in which you are engaged, if you attend to this advice. A man has a small tumour, and you remove it: the chance of mischief from the operation being not one in a thousand. But perhaps, you are performing small operations daily, and to you, therefore, the

chance is multiplied. It is almost nothing to the patient, but it becomes much to you; and it is especially for your own advantage that even these small fractions of danger should never be concealed.

There is no greater source of danger, you may well suppose, in operative surgery, than hæmorrhage. A large flow of blood may kill the patient instantly. If operators were careless on this point, there would be no want of examples of death from hæmorrhage: and even in spite of all the care that may be taken, it happens sometimes that patients die from loss of blood, either at the time of operation or very soon afterwards. When I was house-surgeon to this hospital, a patient had bleeding after lithotomy which could not be stopped, and he died in a few hours. I performed the same operation on a private patient, in whom there was hæmorrhage from the large veins, apparently in the neighbourhood of the neck of the bladder, which could not be stopped, and he also died in about a couple of hours. The danger from hæmorrhage is greatest in very early life. I have seen young children several times at the point of death from this cause. I accompanied an eminent surgeon, when I was young, to remove a nævus, or blood-vessel tumour from the back of a child's neck, (at that time nobody ever thought of removing those tumours except by the knife.) There was a good deal of bleeding at the time, but it appeared to have stopped. The child was put to bed, but in the course of a few minutes it was dead.

However, it certainly happens very rarely that patients die of hæmorrhage as an immediate result of an operation. Do not, however, think that hæmorrhage is of no consequence because it does not cause so frightful a catastrophe as this. The patient may survive a large hæmorrhage and be very well the next day, and the day after that, but it may lay the foundation of mischief, such as I shall describe in another lecture, which destroys the patient ultimately. Nor is this all. The patient may recover from the operation, and the wound may be healed, and yet, where there has been a copious hæmorrhage, the constitution of a delicate person, more especially of delicate women, may be so much damaged by it, that it may not recover it for some years. After an operation I have sometimes heard a bystander say, "Oh, he has lost no more blood than it will do him good to lose." It is painful to me to hear such an observation as this: be assured that an operation cannot be performed with too little loss of blood. The loss of a few ounces in a patient who has a stone in the bladder, complicated with disease of the kidneys, will make all the difference between life and death: and so it is in many other cases. If it is desirable that the patient should lose blood, you can always take it from his arm, and just as much as is wanted, and no more. There can at any rate be no advantage from the loss of an uncertain quantity of blood in an operation. Some people seem to me to have a notion that the loss of blood in an operation will make the patient less liable to inflammation afterwards. But I believe that it is just the reverse. Bleeding may relieve phlegmonous inflammation where it already exists, but it does not prevent its existence; and on the other hand, I have no doubt that it increases



the liability of the patient to other kinds of inflammation, such as erysipelas, or diffuse inflammation of the cellular membrane, or venous and arterial inflammation. Those asthenic inflammations, if I may use the expression, occur especially in those persons who have lost much blood. Let it be your object, therefore, in every operation, that it should be performed in such a manner that there should be as little waste of blood as possible.

And I should mention to you that even a large loss of blood before an operation may be productive of the most disastrous consequences afterwards. A man had a lacerated wound of the thigh, his limb having been caught in some mechanical engine. There was considerable bleeding. He became faint, and the bleeding stopped. He was brought into the hospital in a state approaching to collapse. There was a great deal of injury, and it was evident that nothing could be done but to amputate the limb. The patient lay in bed waiting for what we call reaction to take place. By and by the pulse rose, and the wound began to bleed. The house-surgeon ran for a tourniquet, which unfortunately was not at hand, and before it could be procured, the patient had lost an additional quantity of blood. We were then forced to wait till reaction took place a second time, and when it did so the limb was amputated. The patient was taken back to bed pretty well at first; all at once he felt an irresistible impulse to make water, but could not do it. A catheter was introduced, but the bladder was found empty. In a few minutes he died. On examining the body we found the heart flaccid and empty of blood: the vena cava superior and inferior, and the vena azygos, vessels which are generally full of blood, were all empty. The only blood that could be found was in the aorta and its larger branches. The heart had sent forth into the vessels the last drop of blood contained in it, but there was not a sufficient quantity of blood going the round of the circulation to fill the heart again.

To avoid an unnecessary loss of blood in operations, it is of course indispensable that you should have a thorough anatomical knowledge of the parts concerned; but you are not dependent on yourselves alone. Whatever may be your own skill, it will be insufficient, if you are not provided with a good assistant. It is sometimes better, when an operation is likely to be tedious, to take up the bleeding vessels as you go on; as, for example, in the dissection of some tumours, and even in some cases of amputation, where the patient has no blood to spare. Sometimes, where there is a long-continued dissection, you will find great advantage from using a silver knife with as sharp an edge as can be given to this metal. The silver knife will divide the cellular membrane and smaller vessels, but it will not divide any vessel of considerable size. As it divides the cellular membrane it also stretches it, and elongates the vessels which are in it, and you know that vessels which are stretched before they are divided, bleed but little.

It is a great mistake, (at least in my judgment,) to perform amputation without a tourniquet. I know, indeed, that you may stop the flow of blood in the femoral or in any other large artery, by the

pressure of a strong man's thumb; but by means of a tourniquet you may prevent the bleeding from the small vessels as well as the large ones, and I need explain no further why it should not be neglected.

There is another point, which it is always worth your while to consider before an operation. Has the patient any particular disposition to hæmorrhage? There are some families in which almost every individual is liable to bleed in the most alarming manner from the slightest causes—in whom a pinch of the skin will cause an ecchymosis, and a wound with the point of a pen-knife will be followed by a serious hæmorrhage. Whether in these individuals the coats of the arteries are, as some have supposed, unusually thin, and incapable of contraction, or whether there be some peculiarity in the blood, so that it does not readily coagulate, I cannot say; but we know well the fact of the existence of persons who have this hæmorrhagic tendency, and in whom operations are therefore more than usually dangerous. A man came to this hospital, many years ago, with a wound in his forehead, and he nearly bled to death. The flow of blood was stopped at last, not by tying particular vessels, but by a general pressure; but it returned: it was again stopped in the same manner, but it again returned, and it was not till a large slough had been made by caustic that the hæmorrhage was finally arrested. This man, when younger, had had a bad tooth, and he went to a dentist to have it drawn, but he very nearly bled to death. Some time after he had been at the hospital with his wound in the forehead, he had another bad tooth. At first he was afraid to have it drawn, remembering the danger to which he had been exposed, but at last his toothache drove him to a dentist, by whom it was extracted. There was an abscess at the bottom of the tooth, which was in the upper jaw. A profuse hæmorrhage followed the operation. I was called in, two or three days afterwards, and he had been bleeding all the time. I tried various ways to plug the alveolus, and at last applied the cautery. It stopped the bleeding only for a short period, then it returned; and all other means having failed, I tied the carotid artery. This also was unsuccessful, and the bleeding went on, and ended fatally. This patient's child had the same hæmorrhagic tendency, and very nearly bled to death from the bite of a leech. There was a gentleman belonging to a family of which I have seen many members, all of whom have this singular disposition to hæmorrhage. Upwards of twenty years ago, he sent for me to see him. He had symptoms of stone in the bladder, one of which was a most prodigious discharge of pure blood from that viscus. A surgeon whom he had consulted previously had declared him to have a *fungus hæmatodes* of the bladder. I examined him, and found a stone. I recommended that he should go through the operation of lithotomy, but he said that he should bleed to death; and a circumstance had occurred, since I first saw him, that seemed confirmatory of his opinion. He had been cupped in the perineum, and the wounds made by the scarificators had bled profusely every other day for nearly three weeks. Having seen a good deal of him,



I partook of his fears, and was rather glad to avoid the operation. By and by he sent for another surgeon, who was in very large practice, and certainly had much more knowledge than I at that time possessed. He sounded him, found the stone, and said he had better be cut for it. "Oh!" said the patient, "I shall bleed to death." The surgeon, not being rightly informed on the subject, rather laughed at this: the operation was performed, frightful bleeding followed, which went on for twenty-four hours, and then the patient died.

There is another cause of fatal results at the time of, or immediately after, an operation; namely, the severe shock which under certain circumstances, it may occasion to the nervous system. Sir Everard Home, in the instructive lectures which he formerly gave in this hospital, was accustomed to mention the case of a man who had a diseased testicle. He was placed on the table to go through the operation of castration. The removal of the testicle is a very simple process; there is no bleeding but what is under command, and there was no bleeding here: but when the testicle was removed, they looked at the man, and he was dead. When I was a student in this hospital, there was a man with a large stone in the bladder. Sir Everard Home, who was a dexterous lithotomist, performed the usual operation. The stone broke to pieces, and that at first seemed to be rather a good thing than otherwise, for it is better to take out a very large stone piecemeal, than to drag it out entire. But this occupied a long period of time, there being a deep perineum, and a great number of fragments. The operation I believe lasted a whole hour; then the man was taken back to the ward, but he was dead before he was in bed. This was probably nothing but the effect produced on the nervous system by a long, painful, and anxious operation, upon a healthy subject; and for such a contingency as this you cannot in all cases be prepared. But you may be prepared for it in some cases by well considering the condition of the patient before you undertake the operation.

Suppose for example a man to have disease of the heart, with symptoms indicating ossification of the coronary arteries, that is, symptoms of angina pectoris; he will be much more likely to die from the shock of an operation than another patient; and therefore in him every thing but the smallest operation should be avoided.

In the early part of my professional life, I was present at an operation of lithotomy performed on a patient who had many urgent symptoms of stone in the bladder: the urine was full of bloody mucus, offensive to the smell, and tinged with blood. The suffering which the disease occasioned was almost beyond imagination; but still it was a case in which, notwithstanding the greatness of the suffering, no surgeon with the knowledge we now possess would venture on an operation. This class of diseases was not so well understood at that time as it is at present; and two of the most distinguished surgeons of the day agreed in recommending lithotomy. The operation was performed; it did not last three minutes, and there was scarcely any hæmorrhage. The patient was taken off the table, but

he was dead before he had been three minutes in bed. On examining the body, the prostate gland was found extensively ulcerated; and it seemed that the passing of the instruments over the ulcerated gland had produced that impression on the nervous system that proved thus instantly fatal. I witnessed another operation performed under exactly the same circumstances; except that there were several stones, and, therefore, that it was not so soon over. Before the patient was taken back to bed he was in a state of perfect coma, with stertorous breathing. In this condition he remained for some hours, and then died. A man was in the hospital with stone in the bladder, under the care of Mr. Ewbank: there was a consultation on the case, the question being whether the patient should undergo the operation or not. The symptoms were exactly similar to those which occurred in the two last-mentioned patients; and on the circumstances being stated to him, Mr. Ewbank at once gave up all thoughts of the operation. It was well that he did so; for on the following day the man died, and an extensive ulceration of the prostate, with disease of the bladder, was discovered on dissection.

Of course you may do a great deal towards preventing such a catastrophe by looking thoroughly into the case at first, and it will indeed, rarely happen that you may not anticipate and avoid the danger. Still such a case may occur as that of a patient suffering in an unusual degree from the impression which the operation makes on his nervous system, and in which, by the proper and timely exhibition of stimulants, the system may be supported under it, and the patient's life preserved.

---

### LECTURE III.

#### ILLUSTRATIONS OF SOME IMPORTANT CIRCUMSTANCES CONNECTED WITH OPERATIVE SURGERY. (*Continued.*)

IN the preceding lecture, I explained to you some of the ill consequences of operations, which are met with either at the time of their being performed, or immediately afterwards. In the present lecture, I mean to draw your attention to some other sources of danger, the results of which are not rendered manifest until a later period.

The effect of any local injury depends, *first*, on the nature and extent of the injury itself; and *secondly*, on the condition of the individual at the time of the injury being inflicted. In one state of constitution, the slightest and simplest wound may produce ill consequences, which even the largest and more complicated wound would not produce in another; and it is the duty of the surgeon, before he has recourse to an operation, to study the causes of this difference, and to make himself acquainted with the circumstances



on which its success or failure may depend. Evils which are anticipated may often be prevented, and at all events, it is always worth while to know what are the evils which may probably or possibly arise, in order that you may determine how far you are or are not justified in encountering them.

An operation may be followed by severe phlegmonous inflammation. You may remove a loose cartilage from the knee-joint, and in the course of forty-eight hours the synovial membrane of the joint may be distended with synovia, with great pain in the part, and symptomatic inflammatory fever; or there may be a similar phlegmonous inflammation of the stump after amputation of the thigh, ending, if it be not checked by art, in suppuration and abscesses on the surface of the bone, destruction of the periosteum, and death of the bone itself to a greater or less extent. In such cases it may be necessary to have recourse to what is commonly called antiphlogistic treatment, to take blood from the arm, to give purgatives and diaphoretics, and even to subject the patient to the influence of mercury. It is impossible to say, in all cases, whether it be or be not probable that symptoms of this kind will show themselves, but you may, nevertheless, be justified in expecting them in many instances. A person of plethoric habit, of good constitution, who has been living rather freely, without actual intemperance, is the individual in whom such inflammatory symptoms most frequently appear. You may especially distrust a patient, whose urine is unusually loaded with lithic acid, whether it be a clear high-coloured secretion, depositing red or brown crystals of lithic acid, or whether it becomes turbid on cooling, having a red sediment, composed chiefly of the lithate of ammonia, and staining the bottom of the vessel which contains it, so that it resembles in appearance what they call a pink saucer. The secretion of the kidneys, where it habitually exhibits the appearance which I have just described, always indicates an inflammatory condition of the system. The individual thus affected is in a situation which may be compared to that of a man who has a sword suspended over his head by a thread which may break, so as to put his life in jeopardy at any moment. You must not be surprised, if he be suddenly, and when he supposes himself to be in the best possible health, seized with inflammation of the pleura, or of the knee, or with a brain fever, and you may be assured he is so unfavourable a subject for an operation, that no operation ought to be had recourse to, except as a matter of absolute necessity, and with a view to avoid some very great and pressing danger. Under any other circumstances, let the operation be postponed until, by a regulated diet, by exercise taken daily, not to an immoderate extent, but yet so as to induce a free perspiration, by the exhibition of purgatives, and perhaps of small doses of the alkalies, you have brought the patient into a better state of health.

But the dangerous inflammations which occur after operations have, for the most part, an entirely different character from that of which I have just spoken. They are low asthenic inflammations, connected with a depressed state of the general system, and requiring



a very different treatment from what is required in cases of active phlegmonous inflammations. Of these the most common is that which assumes the form of an exanthematous disease, and which we call erysipelas.

There is no greater source of danger to patients after operation than this; nor is there any more abundant cause for mortification to the surgeon, showing itself, as it does, not only after the most severe and complicated operations, but after those that are regarded the most trifling; not only after lithotomy, or an amputation of the thigh, but after the removal of an encysted tumour from the scalp, or the division of the prepuce on account of a phimosis, or the laying open of the smallest sinus in the groin, or near the rectum. Perhaps the wound made in the operation is healing favourably, and you suppose that your labours are brought to a prosperous termination, when some day, on visiting your patient, you find that he has had a rigor followed by fever, and at the end of twenty-four hours you find him labouring under erysipelas, which endangers his life, and keeps your mind in a state of suspense for the next fortnight.

It would be foreign to my present purpose to give you a history of erysipelas, or to direct the treatment which it requires. My object is merely to explain the peculiar circumstances under which it commonly arises, and to consider the means of prevention.

It has been supposed by some, that erysipelas is contagious, and that it is from this cause that you find it prevail to so great an extent at particular periods in hospitals all over the world. But you must be aware how difficult it is to distinguish between diseases which are communicated from one person to another, and those which affect many individuals about the same time, because they happen to be placed under similar circumstances, and are subjected to the same external influences. Now it has been my lot to live, during nearly the whole of my professional career, where I had abundant opportunities of watching the origin, progress and termination of this terrible malady, and the result is that I am led to believe that it is not really contagious. Exposure to cold and damp, and especially to the influence of these two causes acting in combination with each other, may be the immediate exciting cause; but, if I am not greatly mistaken, it may in nine cases out of ten be traced to a still higher source than this, namely, to a depressed and debilitated condition of the patient's constitution. The depressing effects of the cold north-eastern wind, which in this country prevails on an average for nearly three months between winter and summer, are felt and acknowledged by all, and erysipelas is never more prevalent than it is just at this period of the year. We may in the same manner explain the frequent occurrence of it during a season of extreme cold in winter, or of intense heat in summer. Then you may observe that it occurs especially after operations in which the patient has lost an unusual quantity of blood, and in those who either before or after the operation have been kept on a very low system of diet. We cannot regulate the winds of the spring months, nor the heat of summer, nor the cold of winter, but we may, I am satisfied, do a

very great deal towards counteracting their influence and lessening the danger of erysipelas, by using every possible precaution against an abundant hæmorrhage, by the prudent and judicious administration of nourishment, and by a cautious exhibition of such stimulants as wine and beer to those who are accustomed to them when in health. I was educated in the belief that the thing to be most apprehended after an operation was some kind of inflammation; and that the way to prevent inflammation was to keep the patient on low diet, and as long as I acted in accordance with these views, I was meeting with erysipelas at every turn of my practice. Many years have now elapsed since I became convinced that these doctrines are erroneous: that an operation is a shock to the system, making a great demand on the vital powers: that the effects of this shock are often much aggravated by loss of blood: that a very scanty diet actually makes the patient more liable to certain kinds of inflammation than he would be otherwise; and that our rule of practice ought to be rather to sustain his powers by allowing him wholesome nourishment, and not to add to the influence of other depressing causes that still worse one of starvation. I assure you, and I assert it most positively, that if you attend to the rule which I have just laid down, although you may not prevent erysipelas altogether, you will find it to be a rare instead of common occurrence, and I can scarcely express to you how much greater has been the comfort of my life, and how much less cause I have had for professional anxiety, since I altered my mode of practice, than was the case formerly.

Let me not, however, be misunderstood as recommending that the subjects of operations are to be crammed with animal food, or that wine and porter and brandy are to be freely and indiscriminately administered. As I have already explained to you, there are some individuals who require to be placed on a more moderate system of diet than that to which they have lately been accustomed, to prepare them for an operation; and in the majority of cases, food should be given cautiously for the first day or two after the operation has been performed, and under all circumstances it will be necessary for the surgeon to watch the present symptoms, to make himself acquainted with the patient's previous habits, and to be careful not to administer either animal food or stimulants in such quantity as to excite the pulse, or increase the heat of the skin; or to load the stomach with that which it cannot easily digest. It is dangerous to keep a patient very low who has been accustomed to a very full diet; and it is also dangerous all at once to supply a very full diet to one who has been accustomed to a very scanty fare. An individual who has been in the habit of drinking nothing but water, will require wine and porter and brandy only in a very small quantity, or on extraordinary occasions; while another, who is habituated to the use of such stimulants, cannot be deprived of them more than a very few days, without suffering materially from the privation. I have often in this hospital found it expedient to give a gin-drinker a moderate quantity of gin even on the day immediately following some operation or dangerous accident.



Another inflammatory affection which sometimes arises as the consequence of an operation, has its seat in the veins which have been tied or divided. This occurs under circumstances very similar to those under which we meet with erysipelas; beginning some days after the operation was performed, and being frequently ushered in by a rigour, but being a more formidable disease than erysipelas; inasmuch as it attacks more important organs, and as it generally terminates in suppuration, and in a collection of pus in the cavity of the inflamed vessel. This disease when once begun is little under the dominion of remedies, but much may be done towards preventing its existence; and all the experience which I have had on the subject would lead me to believe that, like erysipelas, it has its origin in a low asthenic state of the system, and that those persons are especially liable to it who have been much lowered by hæmorrhage at the time of the operation, or by a too scanty diet before or afterwards. Arterial, in some instances, accompanies venous inflammation, and it is to be attributed to the operation of the same predisposing causes.

Another source of mischief after operation is what may be called *gangrenous inflammation*; that is, an inflammation which proceeds almost immediately to a termination in gangrene and sloughing.

This assumes a somewhat different form in different cases.

A large gross fat man, who had been much addicted to drinking spirits, was admitted into this hospital, when I was assistant-surgeon, with an enormous irreducible inguinal hernia in a state of strangulation. I divided the stricture, which was in the external abdominal ring, and did nothing more. The bowels acted freely afterwards, but on the third day the skin in the neighbourhood of the wound was inflamed, and in some places, there were vesications on its surface. The inflammation extended rapidly to the rest of the integuments of the abdomen, and in two days more the whole of them were in a state of mortification. The patient died.

You meet with the same disease, though not exactly in the same shape, in what is commonly called "a sloughing stump" after amputation. The stump inflames, and becomes swollen, painful and tender. You are compelled to loosen the bandages. A dirty serous discharge exudes through the dressings. After four or five days you remove the plasters and find not only that there is no attempt at union, but that the whole of the cut surfaces are in a state of gangrene. Sloughs become separated, but others are formed, and thus a rapid destruction of the soft parts takes place, leaving the bone projecting, deprived of periosteum, and dead in the centre.

In another case a diffuse inflammation extends along the cellular membrane producing an effusion of serum and ill-formed pus. At first the surface of the skin has only a dingy reddish hue; but the cellular membrane underneath has lost its vitality. Mortification of the skin follows in patches, and often takes place to a great extent. Sometimes the progress of these frightful changes is rapid, the whole of a limb being involved in them, and the patient sinking, from the impression which they have made on his system, in the course of five or six days. At other times the progress is comparatively slow,



and a fortnight may elapse before the fate of the patient, as to life or death, is finally determined.

But whatever may be the exact character which the gangrenous inflammation assumes, you may be assured that it is always an indication of a low and depressed state of the patient's constitution. According to my experience, it occurs especially in those who have been habitually intemperate, indulging in the free use of spirituous or strong fermented liquors. In persons of such habits it is always prudent for you to avoid the performance of an operation, except it be a matter of absolute necessity. If that necessity should exist, and symptoms of gangrenous inflammation should ensue, bear in mind that to treat it by blood-letting, and what are commonly called anti-phlogistic remedies, is, for the most part, the way to make it more rapid in its progress, and more destructive. A treatment the directly opposite to this is what is really required; and with a view to prevention, the safest thing to do, in the case of a person of intemperate habits, is to allow him a certain quantity of his accustomed stimulus from the beginning, that is, even from the day of the operation.

But it is not in drinkers of spirituous and fermented liquors alone that we meet with this kind of inflammation. Persons of a broken constitution from other causes are liable to it also. Dr. Prout has observed that those who labour under diabetes are affected with carbuncle in a great number of instances. A gentleman labouring under diabetes received an accidental wound on one side of his head. Within a week he was dead, a victim to extensive inflammation and sloughing of the scalp. If he had been in health, such a wound as he received would have been of no consequence; but in the state in which he was, the removal of a small encysted tumour from his scalp would have been equally fatal. I have had the misfortune of losing three patients out of the great number on whom, in the course of the last thirty years, I have performed the operation of applying a ligature to internal piles. In each of these cases, on examination after death, I found diffuse inflammation and a sloughy condition of the cellular membrane between the mucous membrane of the intestine and muscular tunic, and also externally to the muscular tunic as high as the mesentery, and even between its layers. In one of them there was a diseased condition of the kidney, and the urine, which was carefully examined by Dr. Prout, was found to be loaded with albumen, and of a very high specific gravity (1.035). In the second there was a diseased condition of the kidneys also. The urine unfortunately was not examined, but you will know pretty nearly what it must have been when I tell you that in the bladder I found a solid oval body of the size of an almond, and having an appearance like that of amber; in short, a fibrinous calculus; and, as it happens, the only specimen of this variety of urinary deposit which has come under my observation. The third case was that of a patient who had laboured under disease of the digestive organs, and was of a broken constitution. At first I had refused to perform the operation on him, on account of the general state of his health, and advised him to return to his residence in the country.

He came back to me, however, some time afterwards, suffering so much inconvenience that he said he must get rid of the disease at all hazards. I have told you the result. Since these cases occurred, wherever I have had any doubts about the state of the patient's health, I have always examined the urine. I do not say that the existence of albumen in the urine is in all cases to prevent an operation; for I have no doubt that it is sometimes accidental and temporary: and you must be aware that in some instances (as in those of hæmorrhoids attended with very profuse discharges of blood), the danger from the disease may be so great that, even if there be danger from the operation, such danger must be overlooked. Still, this condition of the urine should always be regarded as a reason for proceeding very cautiously; and I should be always very unwilling to have recourse to an operation where it proved to be habitual.

For the sake of making the subject as plain as possible, I have described these varieties of inflammation, which sometimes follow operations, as being quite separate and distinct from each other. Still in practice you will not unfrequently find them existing in combination. One patient will have erysipelas terminating in sloughing and abscess, and when you examine the body after death, you will find the veins to be filled with pus also. Another has diffused inflammation of the cellular membrane in the first instance, but after some time inflammation bearing all the characters of erysipelas shows itself in the integuments. Again, erysipelas may all at once proceed to gangrene and sphacelus. A young woman had a small scirrhus tumour removed from her neck. On that very evening she had a rigor. On the following morning there was well-marked erysipelas of the skin of the neck, extending downwards over the whole of the anterior part of the chest. No proper reaction had taken place after the rigor; the pulse was small and weak, and the extremities were cold. In a few hours the whole of the skin affected by the erysipelas was in a state of mortification; and in less than forty-eight hours from the time of the operation the patient was no more. A poor girl, who came from the country to be admitted into St. George's Hospital, on her journey had the skin of one breast slightly chafed by the whalebone of her stays. On the following morning she had a severe rigor, from the effects of which she never completely recovered. Erysipelas supervened, beginning where the skin had been chafed, and extending rapidly over the whole of the forepart of the chest. The skin thus affected became almost immediately gangrenous, and she died with it in a state of complete mortification in the course of three or four days from the commencement of the attack. Both of these cases occurred in the summer, when the heat was most unusually intense; and they taught me a lesson which I have never forgotten—namely, that operations which are not of an immediate necessity should not be performed when the temperature of the atmosphere is very much above the ordinary standard.

There is still another class of inflammatory affections to which the attention of our profession has of late years been much directed, consequent on accidental injuries, and on surgical operations, which



I must not pass over unnoticed. The seat of these inflammations is not in the part which has been injured, or which has been the subject of the operation, but at a distance from it. A man has an injury of the head, and, when he dies some time afterwards, you find deposits of pus in the lungs, or abscesses of the liver. In another case there are symptoms of cellular inflammation and suppuration about the neck of the bladder after lithotomy; but death does not take place immediately: the case is protracted; and before he dies, the patient suffers from swelling, inflammation, suppuration and sloughing of the parotid glands; for there is a purulent deposit in each of the knee-joints. In other cases there are deposits of pus in the cellular membranes, or of serum, lymph and pus, in the peritoneum or pleuræ.

Now it has been supposed by some that, in these cases, the secondary disease is always connected with venous inflammation, and that the circumstance may be explained by supposing that pus secreted by the inner surface of the veins is carried into the torrent of the circulation, and afterwards deposited, even without any inflammatory process, in some other and distant organ. I cannot, however, believe that this is the true theory of the disease. In a case of compound fracture of the right leg, in which the patient died at the end of a month with deposits of pus in the lungs and liver, and in the cellular membrane over the abdominal muscles, and near the left (or opposite) groin, the veins were most carefully examined everywhere, but no venous inflammation could be detected. In another man, who died after a surgeon had most injudiciously applied the caustic potash to the skin over the occiput, so as to make a slough of all the soft parts, and expose the bone itself, I had the opportunity of examining the body after death, and found the *dura mater* detached from the inside of the bone to the same extent as the destruction of the pericranium had taken place on the outside; and no trace either of venous inflammation in the injured part, or of suppuration on the surface of the *dura mater*; while the peritoneum was universally inflamed, and the intestines were agglutinated to each other by coagulated lymph. I might, if it were necessary, produce a great number of similar examples; but these are quite sufficient for my present purpose. Having now watched the progress of a great number of cases of this description, I am led to believe that these secondary inflammations are to be attributed not to the entrance of pus into the vessels, and the transfer of it when secreted in one part through the medium of the circulation to some other part of the body, but to the long continuance of a low febrile excitement of the system. However that may be, these cases are replete with danger. The rule is, that they terminate fatally; and the exceptions to this rule are very rare.

Still such exceptions exist, and every now and then you will find the secondary inflammation to subside without going on to the deposit of pus. One such case is probably in the recollection of some of those whom I now address. It was that of the last patient (George Bean), in whom I tied the external iliac artery before I



resigned my office as surgeon to the hospital. On the evening after the operation, the whole of the abdomen became painful and tender; the pulse was frequent; the skin hot; the tongue dry and brown. Some blood was taken from the arm. On the following day, as the symptoms continued, Mr. Cutler, in my absence, repeated the blood-letting. On the second day after the operation, the symptoms being not at all relieved, I destroyed the adhesion of the edges of the wound with a probe, and gave exit to some sanious matter collected within. Finding that the man had been a dram-drinker, instead of having recourse to further depletion, I now ordered him some medicine containing ammonia, and a small quantity of wine, with some beef-tea, &c. On the following (that is, the third) day none of the local symptoms were relieved, and the constitutional symptoms were much aggravated; and in addition to that which had existed previously, there was a most intense pain, with swelling and tenderness in the right shoulder, (that is, the shoulder on the opposite side to that on which the artery had been tied.) I now left off all medicine, and prescribed half a pint of red wine to be taken daily, with such nutriment as the stomach would receive. The pain in the shoulder, with some degree of swelling, continued for a considerable time; but on the quantity of stimulus being further increased, this, as well as the other symptoms, gradually subsided, and the patient ultimately recovered. I am induced to mention to you briefly the principal circumstances of this case, because, as they were instructive to myself, so I hope that they may be not uninteresting to you. They show that a secondary inflammation, such as might be expected in the common course of things to proceed to a purulent deposit, may, in some instances, be made to terminate in resolution. They furnish also an example of a low inflammatory affection in a person accustomed to the use of spirits, being relieved not by bleeding, antimonials and purgatives, but by a directly opposite method of treatment; namely, the prudent exhibition of stimulants and nourishments: thus confirming the observations which I have already made on this important point in surgical practice.

Besides the various sources of danger after operations to which I have just called your attention, and which are all connected with inflammatory action, there are others not less important which are connected with derangement of the function of the nervous system.

As a wound made accidentally may be followed at the expiration of ten days or a fortnight by symptoms of tetanus, so that made by the hand of the surgeon may produce the same unfortunate result. You must not, however, (in this climate, at least,) allow the apprehension of this terrible disease to enter into your calculation. It is just as probable that it will occur after the most trifling operations, such as you perform daily, as after those which are most difficult and complicated; and the chance of this occurrence after either the one or the other is so very small, that for all practical purposes you may regard it as none at all. If you were to take account of such small chances as this, you would not take a journey on horseback for fear of being thrown off your horse and killed; nor

would you venture to travel in a mail-coach, or in a railroad-carriage. Besides, we have no such knowledge as will enable us to say in what particular case it is most probable that tetanus will occur, nor how it is to be avoided or prevented.

You have heard of, and most of you have witnessed a disturbed state of the nervous system which sometimes follows local injuries, and to which M. Dupuytren has given the name of traumatic delirium, though that of traumatic mania would be a more appropriate appellation. This disease may follow the injury done by an operation as well as that which arises from an accident. The case is always replete with danger, and not unfrequently, even in spite of the most judicious treatment, the termination of it is fatal. It is not my intention to occupy your time by giving an exact history of the symptoms and progress of the disease; these being, I doubt not, well described in the systematic course of lectures delivered in this theatre by Mr. Cæsar Hawkins. It is sufficient for my present purpose that I should observe that the symptoms vary somewhat in different cases, and that the degree of danger varies also.

Now, according to my observations, the cases in which this disturbed state of the nervous system follows accidental injuries and operations in the London hospitals, are chiefly those of individuals who had habitually indulged too much in the use of fermented and spirituous liquors, and especially of dram-drinkers; and in the majority of these cases, the symptoms immediately follow the sudden abstraction of the accustomed stimulus. A man who has been accustomed to drink his bottle of wine daily, with the addition, perhaps, of some porter at his dinner, or to swallow daily one or two pints of gin or brandy, should, after an operation, (unless there be some very potent reason against it,) be at once allowed a moderate proportion of his usual liquor, and, perhaps, a still larger quantity afterwards: or if attention has not been paid to this in the first instance, and the symptoms of traumatic mania have begun to show themselves, wine, or gin, or brandy, with the addition of the acetate or muriate of morphia, should be immediately exhibited with a view to arrest its progress. In some few cases of persons whose habits have predisposed them to this disease, there may perhaps be inflammatory symptoms of such a nature as to justify or demand the use of the lancet, and other methods of depletion, in the first instance. This treatment, however, will only make the patient more liable to traumatic mania afterwards, and his life will certainly be sacrificed unless you exercise a sound judgment in choosing the exact moment of time in which you shall alter your treatment, and substitute the cautious exhibition of stimuli and opiates for that which you had employed previously.

Nervous symptoms, which are essentially, though not in all minute particulars, of the same character as those which arise in persons who have been too much addicted to strong potations, may arise under other circumstances. In the museum of this hospital you will find the lower portion of a tibia divided longitudinally, and exhibiting the cavity of an abscess in the cancellous structure imme-



diately above the ankle. I shall give you briefly the history of this case, as it will serve to illustrate our present inquiry, and is of much interest. The patient was a young man about twenty-four years of age, and he consulted me rather more than eighteen years ago under the following circumstances. He had an enlargement of the lower extremity of the right tibia, with pain, which was constant and at all times severe; but he was subject to paroxysms, in which his sufferings were described as being most excruciating. These paroxysms recurred at irregular intervals, confining him to his room for many successive days, and being attended with considerable constitutional disturbance. He had consulted many surgeons, without deriving any advantage from their advice. The remedies which I prescribed were of no more avail than those which he had taken before; and when I proposed to him that he should lose his limb, he gladly consented to the operation. The preparation to which I have referred you sufficiently explains the nature of the disease; but the termination of the case is that which is most to our present purpose. The patient bore the operation with the utmost fortitude, so that a bystander could not have supposed that he suffered the smallest pain. Immediately afterwards, however, he became restless and irritable, and too much disposed to talk. Unfortunately, in the evening there was hæmorrhage from the stump, which ceased on the removal of the dressings and coagula, though not until a considerable quantity of blood had been lost. During the night he had no sleep, and on the following morning, he was restless and incessantly talking, with a rapid pulse. The symptoms became aggravated. There was no disposition to sleep, and the pulse became so rapid that it could be scarcely counted. Until the third or fourth day the tongue remained clean and moist; and afterwards it became dry and somewhat brown. There was constant delirium. The pupils were widely dilated; and the sensibility of the retina was so completely destroyed, that the glare of a candle was not perceptible, even when held close to the eye. Death took place on the fifth day after the operation. No morbid appearances were detected in the *post-mortem* examination.

There can be no doubt that the immediate cause of this patient's death was a disturbed state of the nervous system consequent on the shock of the operation, but probably aggravated by the secondary hæmorrhage afterwards; and it is reasonable to suppose that the state of constant misery and excitement in which he had lived for many years, and which, as I was informed, had rendered his temper unusually irritable and capricious, made him more liable to be thus affected than he would have been otherwise.

In other cases, a corresponding predisposition may be traced to an originally imperfect construction of the nervous system, showing itself, as the patient attains the age of puberty, in the form of aggravated hysteria; or perhaps, at a more advanced period of life, in that of mental derangement. I have seen several remarkable cases of severe nervous symptoms following even small operations in the former class of patients. The history of such cases would of itself



occupy a lecture, and it is sufficient for my present purpose that I should call your attention to them, and that I should state, as the result of my experience, that those who labour under disease of the nervous system are among the most unfavourable subjects for all kinds of operation. Even in the case of a young woman who is more than commonly hysterical, I advise you to proceed with caution. Her powers of life are weak; she will ill bear any considerable hæmorrhage; and she is more liable than others not only to a dangerous disturbance of the nervous system, but also to those low inflammatory affections consequent on operations, of which I have spoken formerly. I do not say that you are never to recommend an operation to persons of this description; but I am satisfied that you ought to have a very sufficient reason for doing so; and I advise you, if an operation be determined on, to make every possible provision against much loss of blood; and to endeavour to sustain the powers of the system by the careful administration of nourishment, and even of stimuli afterward.

I need scarcely tell you, that, as a general rule, the existence of organic disease in any organ that is concerned in the vital functions should be regarded as a great objection to a surgical operation. To perform the operation of lithotomy where the existence of a stone in the bladder is complicated with disease in the kidney, is almost a sure method of shortening the patient's life. To lay open a fistula of the rectum where there is also disease of the lungs, will probably cause the tubercles and vomicæ of the latter to become more rapidly developed. Nothing but the most pressing necessity can justify an operation under such circumstances. Still, such necessity may exist; and when it does exist, you are not to shrink from the responsibility of doing what is required. You may be called to a patient who has an aneurism in the popliteal artery and in the aorta at the same time. To tie the artery in the thigh, where such a complication exists, and where there is nothing in the state of the popliteal aneurism to cause immediate danger, would be madness; but to hesitate to do so, if it were on the point of bursting, would be cowardly and cruel.

Gentlemen, in thus describing to you the various sources of danger after surgical operations, my object has been not to diminish, but to increase your confidence in operative surgery. The surgeon who goes blindly on, not looking at the evils which may probably or possibly ensue, is a mischievous member of society; while he who proceeds with circumspection, and makes it his business to learn what those evils are, will know how to avoid them, and although he cannot always command success, still it will be only on some comparatively rare occasions that he will experience the bitter disappointment of finding that the efforts which he has made for his patient's good have turned out to his disadvantage.

## LECTURE IV.

## ON MORTIFICATION.

A PART of the animal body may lose its vitality, while the rest continues to live. We say then that it is mortified; and the process by which this change is brought about we call mortification, or sphacelus. The term gangrene properly signifies the commencement of mortification, or that condition of the affected part which immediately precedes mortification. But it is somewhat loosely employed, and not unfrequently is used as synonymous with mortification and sphacelus. This change, by which a living organ returns to the state of dead matter, viewed in connection with the changes by which it is preceded, and those which follow it, is one of the most interesting subjects in the whole science of pathology, and the treatment to be employed under these circumstances forms one of the most important inquiries belonging to practical surgery; and I am sure that you will not think your time ill bestowed if I call your attention to these matters in this and the following lectures.

The causes of mortification, as I shall explain to you hereafter, are various. If the part affected be one immediately concerned in the vital functions, the death of the entire animal is a speedy, if not an immediate consequence. If the part affected be one not directly necessary to life, still if mortification exist to a very considerable extent, so great an impression will be made on the whole system that the same result will probably ensue. Otherwise, after a certain period of time, another process becomes established, by which the dead part is separated or thrown off from the living. We distinguish this process, when it occurs in soft parts, by the appellation of sloughing, and the part separated is called a slough. When, however, it occurs in the hard parts, as in the bones or cartilages, we call it the process of exfoliation, and we give the name of exfoliation to the dead bone which has become detached.

Sloughing and exfoliation are accomplished by ulceration of the living parts in contact with the dead. A thin layer of the living parts is absorbed, and the dead part is left lying loose on the ulcerated surface.

The period of time required for the completion of the process of mortification differs according to the circumstances under which the mortification takes place: it may be very slow; it may be rapid; it may be almost instantaneous; as I shall explain to you more fully hereafter. The period required for the completion of the after-process of sloughing varies also; *first*, according to the state of the system, and the activity of the vital powers generally; *secondly*, according to the organization of the part in which the disease occurs: thus, other circumstances being the same, the sloughing of the skin



is much sooner accomplished than that of tendon, or than the exfoliation of bone; *thirdly*, according to the state of the neighbouring living parts, without reference to the state of the general system; thus, if there be much inflammation in them, the ulcerative process proceeds much more rapidly than when the inflammation is very slight; and *lastly*, as long as the mortification continues to spread there can be not even the commencement of the process of separation. The reason of this is so obvious that it can require no explanation.

I have seen mortification begin in an old man's toe, and be gradually spreading even for months, up the foot and leg, without the least appearance of a line of demarcation, or the least attempt at sloughing. In the same manner a piece of dead bone may continue adherent to the living even for some years. If the disease, on which the death of the bone depends, can be arrested, as it sometimes can, (by mercury for example, or by sarsaparilla,) the exfoliating process begins immediately, and when begun it is completed as soon as under ordinary circumstances.

The separation of the dead part is followed by another series of changes, which terminate in healing—or cicatrization. But these changes are not at all different from those which occur when there is a loss of substance in other ways, and it is not my intention, therefore, to enter into the consideration of them at present.

Having offered these general observations on the subject, I shall proceed to consider the various circumstances under which mortification may take place, and the treatment which it requires, accordingly as it arises from one cause or from another.

#### MORTIFICATION FROM INFLAMMATION.

Mortification is described as one mode in which inflammation terminates. A very intense degree of inflammation may lead to this result in any structure, or in any constitution; but a moderate degree of inflammation may lead to it also in particular cases. Inflammation of cellular membrane terminates in mortification more readily than inflammation of the skin; and in persons of bad constitution, the cellular membrane is more likely to mortify than in others. You see examples of this over and over again in the cases of the diffuse cellular inflammation which occurs in dram-drinkers. A small puncture of the leg, or a compound fracture in which the injury is apparently trifling, may, as you know, cause inflammation extending gradually from the foot to the buttock, and the whole cellular membrane may, in the course of a few days, become a putrid slough. I have seen a case in which a patient became affected in this manner from a leech-bite; and another in which a similar mischief followed the sting of a bee, and both these patients died. From what has since fallen under my observation, I have little doubt that they were both dram-drinkers, though I was not sufficiently acquainted with the subject to have my attention directed to it at the time. In the case of the man stung by the bee, however, something may, perhaps,



be attributable to the operation of the animal poison; and I shall revert to this point hereafter. I once lost a patient with diffuse cellular inflammation ending in mortification after the simple operation of castration; and I was disposed to attribute this unfortunate result, in a great degree, at least, to the operation having been performed after a long course of the tincture of iodine.

If inflammation of the skin terminates in mortification, independently of any antecedent inflammation and mortification of the cellular membrane beneath, the inflammation is usually intense; the surface of the skin is of a dark red colour, and there are severe pain and tenderness. As the inflammation advances, the skin assumes a livid appearance; a serous fluid is thrown out under the cuticle, which is thus elevated in the form of blisters; and then the skin itself perishes. If the mortification takes place to any great extent, the general system suffers. The pulse is feeble, irregular, intermitting; the countenance is anxious; the skin becomes cold; there is an utter incapability of exertion; and after a few days, and sometimes sooner, the patient dies. If the constitution does not suffer in this manner, or if the patient survives the shock, after a few days the separation of the slough begins to take place, and this is the first step towards a complete recovery.

In cases of diffuse cellular inflammation, the occurrence of mortification is preceded by an abundant infiltration of serum. In some instances the serum is of a peculiar yellow colour, and the skin over the whole body, and the *tunicæ conjunctivæ* of the eyes, may assume the same appearance. I do not know to what cause this yellow tinge is to be attributed. The patient looks as if he were jaundiced; but he is not so in reality, for there is no bile in the urine. When mortification of the cellular membrane has begun to take place, the constitution suffers in the manner which I have already described. If the patient survives the shock, or lives for some time under it, the mortification of the cellular membrane is invariably followed by mortification of the skin over it to a greater or less extent.

Allowing for the difference of function in the affected organs, the foregoing description will apply pretty nearly to all cases in which inflammation of the soft parts terminates in mortification. If there be mortification of the intestine, there is an effusion of dark-coloured serum into the abdominal cavity. Whenever the part which mortifies is situated internally, so that the putrid serum formed round the slough cannot escape, the constitution suffers much more than where it is situated externally, and especially an intermitting pulse and hiccough are often added to the other symptoms. Probably these more aggravated symptoms are to be attributed to the pent-up putrid matter being in part reabsorbed into the circulation. I shall mention some circumstances hereafter which seem to favour this opinion.

It proves an interesting subject of inquiry, how it is that inflammation terminates in mortification; or what is the pathological explanation of this phenomenon? and this leads us to the question as to the nature of inflammation itself. Mr. Hunter describes it as

consisting in an increased action of the small blood-vessels. If increased action be indicated only by a greater degree of contractility in the coats of the vessels, the theory is evidently wrong; for microscopic examination proves that there is no such thing. But, in fact, this is not what Mr. Hunter meant: and in another sense of the words he is clearly right; for the vessels of an inflamed part secrete serum, lymph and pus, and build up new structures; in short, they do many things which they do not do under ordinary circumstances; and all this affords an abundant evidence of increased action. Another theory of inflammation which has been of late promulgated in opposition to that of Mr. Hunter is that the essential part of it is a debility, a weakened state of the capillaries; and the propounders of this theory refer to the dilatation of these vessels in proof of it. But I own that I can discover no reason to believe that the dilated state of the capillaries proves any thing, except that there is something in the condition of an inflamed part which makes a greater supply of arterial blood necessary, and that they have the power of adapting themselves to those new circumstances. Nor is this power limited to the capillaries. It exists in the arterial trunks, in which the capillaries have their origin. Thus, in an animal killed by arsenic, in whom the poison produces extensive inflammation of the mucous membrane of the stomach and intestines, the branches of the mesenteric are seen dilated to double their natural diameter. In like manner, when muscles are in exercise, or when a gland is pouring forth an abundant secretion, the capillaries become dilated so as to admit the increased quantity of blood which under those circumstances, of greater activity of the organ is required; but no one dreams of their being therefore in a state of debility, and I see no difference, in this respect, between those cases and that of inflammation. But microscopic examination proves something more than the mere dilatation of the capillaries. "The blood itself is affected. It loses its globular structure, and previously to this the globules themselves are observed to have lost their repulsive properties, and either to agglomerate together, or to adhere to the sides of the vessel in which they are contained," and not unfrequently they seem to stagnate, so as to choke up the vessel altogether, and destroy the circulation in it. Now if this happens in many vessels, the vitality of the part cannot be maintained, and thus the occurrence of mortification is easily explained. There is, however, something more than this in some instances. For example, let us suppose a case of inflammation of the cellular tissue of the scrotum. The cells are filled with serum. They are fully distended and the skin is on the stretch. If nothing be done to the part, the cellular membrane first, and the skin afterwards, will mortify to a great extent. But make some incisions with the point of a lancet, and the serum escapes in sufficient quantity to relieve the tension, and the mortification is in great measure, or perhaps, wholly, prevented. It is reasonable to suppose, that, in consequence of the extreme distension, the fluid in the cellular membrane causes so much pressure on the vessels which supply the skin as to impede the passage of the blood through them, and that the punctures of the scrotum and



the escape of the serum prevent the mischief which would otherwise have ensued, merely by removing the pressure. When a common abscess opens, as it sometimes does, by mortification and sloughing of a portion of the skin over it, we are not to regard the mortification as the mere result of inflammation, any more than in the case which I have just stated. The ulcerative process going on under the skin destroys a portion of the vessels by which the skin is supplied, and the pressure of the matter probably prevents the free passage of the blood through those which remain; and thus a due supply of blood being prevented, the skin perishes.

*Treatment of cases in which inflammation terminates in mortification.*—Whatever tends to lessen the violence of the inflammation, ought to prevent, or check the progress of, the mortification; and, on these grounds, the patient ought to derive benefit from the abstraction of blood.

But, on the other hand, the abstraction of the blood by which the life of a part is supported, if carried beyond a certain point, is of itself an adequate cause of mortification; and the abstraction of even a small quantity of blood may lead to this result under certain circumstances.

It is not by a reference to principles alone that you can learn how you should act in this dilemma. Experience is our safest guidance, and on this as on many other occasions, the mere practical surgeon will have a great advantage over the mere scientific pathologist.

If the inflammation be intense, if the pulse be strong and full, the countenance flushed, and the skin hot,—that is, if there be marks of great general excitement of the system, it is probable that the patient will derive benefit from blood-letting; and if you have reason to believe that he is of what may be called a sound constitution, blood may be drawn to a considerable extent, and the blood-letting may be repeated. I have often adopted this practice under these circumstances with the greatest success, not only where the purple colour of the skin and the existence of vesications showed that mortification was impending, but where it had actually begun; and have had the satisfaction of seeing the progress of the mortification immediately suspended. You will have no better opportunity of watching the beneficial results of such a mode of treatment than in some cases of sloughing sores or chancres on the *glans penis*. While you administer opium and stimulants, the marginal inflammation increases, and the sloughing continues to spread. Take some blood from the arm, and the inflammation becomes abated, and the progress of the sloughing is suspended. Repeat the blood-letting, and the sore assumes in a short time a healthy aspect. In such cases I have known nature accomplish what was wanted, while a timid surgeon was doubting how to act. There has been a spontaneous hæmorrhage; the patient has lost half a pint or even a pint of blood. Immediately the pain, the tension of the surrounding part, the redness, and the general excitement, have been relieved; and in the course of a week the sloughs have separated, and the sore has become covered with healthy granulations.



But there are other cases in which blood-letting would be as mischievous as it is useful under the circumstances which I have just described.

Let us suppose a patient who has been a dram-drinker, or who, belonging to the more affluent classes of society, has indulged in too copious libations of wine, or whose constitution has been otherwise impaired, and that he has received some injury of the leg, followed by diffuse inflammation, which threatens to terminate in sloughing of the cellular membrane, and afterwards of the skin; or in whom the mortification of these textures has already begun: let us suppose also that although inflammation is spreading rapidly, it is not marked by any very urgent symptoms: that the pulse is small and feeble; and the countenance expressive of anxiety. Now, if, under these circumstances, you abstract even a moderate quantity of blood, it is probable that you will hasten the progress of the local mischief; and if blood-letting be employed to a considerable extent, it will certainly destroy what little chance there might otherwise have been of the patient's recovery. Let us suppose another case. There is a chancre or other sore on the penis. It is surrounded by a languid inflammation; the neighbouring parts are gradually assuming a dark livid appearance; the pulse is small and quick, or no excitement of the general system. Under these circumstances also, the abstraction of blood, instead of checking, will cause a more rapid progress of the disease.

Now it is highly important that you should learn to distinguish these two classes of cases from each other: and in a great number of them you will have no difficulty in doing so. You cannot, however, draw any exact line between them: and cases will occur in practice, in which you cannot exactly determine in the first instance, which is the proper course for you to pursue. Here you must proceed cautiously, watching daily the operation of the remedies which you employ, and persevering in one mode of treatment, or adopting another, according to the effect produced; and frequently it may be right to take away a moderate quantity of blood in the first instance, and to have recourse to an opposite mode of treatment almost directly afterwards.

In order that I might bring the subject before you in its simplest form, I have hitherto referred merely to the question of blood-letting. But of course this involves much other treatment. Where blood-letting is proper active purgatives will be proper also, as well as saline and diaphoretic medicines; and every thing in the shape of stimulating liquors and food should be avoided. Where blood-letting, on the other hand, is improper, though aperient medicine may be required, very active purgatives should be avoided. The patient should be allowed such diet as his stomach is capable of digesting; and he should have wine, or ale, or even brandy or gin—the quality, as well as the quantity, of the stimulus varying according to the character of the symptoms, and his previous habits. I say his previous habits; for it is essential that you should always inquire what these have been, and act accordingly. It is rarely safe to deprive a dram-

drinker, for any considerable time, altogether of his usual stimulus ; and the effect of a judicious exhibition of it is very remarkable, not only in arresting the progress of mortification, but in abating the violence of the inflammation which leads to it. Decoction of bark, quinine, and other tonics, may be useful under certain circumstances ; but I must say that the longer I live, and the more I see of these cases, the less is my faith in such remedies, while inflammation and mortification are going on : and I am satisfied that they often do great harm, by loading the stomach, and interfering with the digestion of food. At a later period, however, when the progress of the mortification is stopped, and the sloughs are beginning to separate, I have no doubt that they are eminently useful. The repeated trials which I have made, and seen made, of ammonia, have not left on my mind any more favourable impressions of this remedy than those which I entertain of bark and quinine. It is a temporary stimulus ; but alcohol, prudently administered, is much better : and my observation leads me to suspect that large doses of ammonia, if persevered in for a considerable time, tend to depress the vital powers, and lessen the chances of recovery. Opium is useful under certain circumstances ; as where there is severe pain ; or where the inflammation or mortification depends on the operation of a specific poison.

I have already had occasion (with a view to explain the pathological phenomena of mortification) to advert to the effects of incisions made through the skin into the cellular membrane, when the cells of the latter are exceedingly distended with serum. Whether the explanation which I then ventured to offer of the mode in which this serous infiltration operates in producing mortification be or be not correct, there can be no doubt that the evacuation of the serum, and the consequent relief of tension, will go far towards preventing an extensive mortification in all cases, and will prevent it altogether in a great many. It is not, however, always necessary for this purpose that we should make scarifications or incisions. Mere punctures are not unfrequently sufficient. I have on many occasions requested the house-surgeon of this hospital to make punctures where this serous infiltration of the cellular membrane was going on, every morning and evening, or whenever he had the opportunity of doing so ; and it often has happened that nothing more was required. But of course this simple practice is useful only in an early stage of the disease — where there is that state of things which may lead to mortification, but where mortification has not actually taken place. Where sloughs of the cellular membrane have begun to form, or where an infiltration of pus has begun to follow the infiltration of serum, mere punctures of course will be insufficient. Incisions or scarifications will then be required ; and they should be of sufficient extent to allow the serum and pus to escape freely, and to relieve the tension of the skin. But they should not be more than this : first, because such painful operations are a great shock to the nervous system of a person in vigorous health, and a very great one indeed to one who is weakened by previous disease : secondly, because this shock is not given to the system once for all, as, if the inflammation



spreads, it may be necessary that the incisions should be repeated: thirdly, because in proportion to the extent and depth of the incisions, is the danger of hæmorrhage; the occurrence of which, to any considerable extent, is sufficient to prevent the patient's recovery. In making the incisions, you should always bear in mind that it is of vital importance that there should be as little hæmorrhage as possible; and here you will find the advantage of having some active and intelligent assistants, who will carefully watch your lancet or scalpel, and whenever they see a vessel beginning to bleed make pressure with the finger on it. Ligatures may be sometimes required; but not in general. The divided vessels under these circumstances bleed profusely in the first instance, but they soon contract, and the pressure of the finger for a few minutes is usually sufficient to stop the hæmorrhage altogether.

The foregoing observations apply to all cases in which inflammation of cellular membrane has already begun to terminate in gangrene, or threatens to do so, whether the inflammation be phlegmonous or erysipelatous, or that peculiar variety of inflammation which produces carbuncle. The effect of scarifications in preventing the further progress of mortifications of the skin in all these cases is very remarkable; but under certain circumstances, they produce a still greater benefit to the patient. Whenever putrid matter is pent up round a slough of the cellular membrane, the system is, as it were, poisoned. The sulphuretted and carburetted hydrogen gas evolved during the decomposition of dead animal matter, seems to pass, in part at least, into the circulation, and produces the most dangerous symptoms. The incisions, which relieve the tension of the skin, allow these noxious gases to escape, and the relief which this affords to the patient is most remarkable. I might, if it were necessary, enumerate a great number of cases in illustration of what I have just observed. One, however, will be sufficient: and this I am tempted to relate, because the subject is one of great importance, and because a particular instance may serve to impress it more on your minds than a mere general observation. I was called some few years since to see a gentleman, who appeared to be actually on the point of death. His extremities were cold; his pulse barely perceptible. It was doubtful whether he was sensible or not. He made, on being roused, several imperfect attempts to speak, but could say nothing intelligible. Below the right hypochondrium there was a considerable tumour; the skin being of a dark red colour on the verge of mortification. I said to myself this gentleman ought not to be allowed to die without it being ascertained what this tumour is. On examination with the fingers I perceived a sort of emphysematous crackling, and only an imperfect fluctuation. On making a free incision, I discovered underneath the discoloured skin what might be called a quagmire of slough. A small quantity of putrid matter escaped. But there escaped also such a quantity of noisome and offensive gas, apparently sulphuretted hydrogen, that I could scarcely bear to remain in the room. The stench pervaded the whole house, and even could be perceived in the garden round it. Within two minutes after the performance of



this operation, so trifling in appearance, but so important in reality, the patient looked up, and said quite distinctly, "What is that you have done which has made so great a difference in my feelings?" At the same time the pulse returned at the wrist, and from this moment he recovered without any further unfavourable symptoms. After a few days sloughs came away, probably of muscle, cellular membrane and peritoneum, in a confused mass; and with them a gall-stone of moderate size—explaining, to a certain extent, at least, the origin of the disease.

The cases in which you will most frequently have occasion to resort to the employment of scarifications are those of diffuse cellular inflammation of the extremities, whether it be phlegmonous or erysipelatous, and those of carbuncle. But there is another class of cases, which occur after injuries, and often after slight injuries of the scalp, in which the same treatment will be required; to which, before I conclude this present lecture, I am tempted to draw your attention. *First*, because they will serve to illustrate the observations which I have already made; and *secondly*, because the disease is one with which you ought to be made acquainted, but which, as far as I know, has not been distinctly described by surgical writers. Here, as in cases of erysipelas of the skin, there is a rigor followed by an attack of fever preceding the local symptoms. The latter show themselves in the form of pain in the neighbourhood of the wound or contusion, and an œdematous swelling of the scalp, without any redness of the skin. The swelling pits on pressure. It spreads over the whole scalp to the forehead, and sometimes over the whole face, the skin still retaining its natural colour, or even appearing paler than natural. The progress of the swelling is accompanied by pain in the head, and a continuance of febrile symptoms. In some cases, the disease, after having continued for ten or twelve, or perhaps fourteen days, begins to subside; the serum which caused the œdematous swelling being gradually absorbed without any further mischief. In other cases suppuration takes place underneath the scalp, with extensive sloughing of the cellular membrane, and this is followed by sloughing not only of the scalp above, but of the pericranium underneath. I have known the latter destroyed to such an extent as to lay bare a large portion of the bone of the cranium. If you would prevent all this great mischief, you must by one method or another relieve the tension caused by the œdematous effusion into the cellular membrane. Simple acupunctures are often sufficient for this purpose, provided that they are repeated once or twice daily for several successive days. Where a sufficient quantity of the serum does not escape by the punctures, large openings are required, and incisions must be made through the scalp, and the subjacent textures, quite down to the cranium. These must be repeated from time to time, as the disease extends from one part of the scalp to another. The appearances observed when these incisions are made explain in some degree the seat and nature of the disease. There is a slight effusion of serum immediately underneath the scalp; but the great effusion, and that on which the tumefaction chiefly depends, is

underneath the tendon of the occipito-frontalis muscle; and here the effusion is in some instances so extensive, that I have known the tendon to be separated as much as half an inch, or even more, from the pericranium. A large quantity of serum immediately escapes on the incision being made, the tension is of course relieved, and the destruction of the parts is prevented. I suspect this disease to be a form of erysipelas, although the skin is not usually inflamed, as every now and then it assumes the character of true erysipelas as soon as it reaches the face.

Let us now suppose that mortification has taken place to a certain extent; that the progress of it is arrested; that the system survives the shock; what further local treatment is required?

Indeed, I have little faith in any. The separation of the slough is a natural process. It is usual to apply stimulating, or as they are called, digestive ointments; solution of chloride of soda; stale beer poultice, and other things of the same kind. But my own experience would lead me to believe that the process of separation will go on just as fast with the simplest treatment, such as that of a bread and water poultice, or a linseed poultice, or wet lint with a piece of oiled silk over it. The constitutional treatment at any rate is of much more importance than any topical applications. Bark may generally be given with advantage; but the discreet administration of wine and a nourishing diet is of more importance still. Of course no general rule can be laid down. You must study the existing symptoms and act accordingly.

---

## LECTURE V.

### ON MORTIFICATION. (*Continued.*)

#### MORTIFICATION FROM STRANGULATION OR LIGATURE.

I NOW call your attention to some other varieties of mortification.

A ligature drawn round any part of the body, so as to intercept the communication of the great vessels and the heart, may cause that part to perish. But the effect of the ligature is not the same in all cases; and it does not always produce mortification in the same way. You apply a bandage round the arm before you bleed a patient, to make the veins of the forearm become distended, the object being merely to stop the circulation in the superficial veins. If you take it off at the end of a few minutes, the hand is at once just as it was before the ligature was applied. If you were to leave it on for twelve hours, the whole hand and forearm would become swollen, and would remain swollen for some time after the bandage was removed. The swelling in such a case arises from the congested state of the veins, and from the consequent effusion of some of the



serum of the blood into the cellular membrane. If the ligature round the arm be still tighter, so as to obstruct the circulation to a greater extent, but without arresting it altogether, the same effect is produced, namely, serous effusion, which may continue for some time after the cause which produced it is taken away. The first effect, then, of a ligature which obstructs the circulation without arresting it completely, is to produce serous infiltration of the cellular membrane, and an œdematous swelling. The different kinds of dropsy depend on the same principle. Disease in the heart, impeding the circulation through it, gives rise to anasarca of the legs, and dropsy of the pericardium and pleura. Disease of the liver produces dropsy of the peritoneum.

But let us suppose that a ligature is applied in this manner round the arm, and allowed to remain, so that the impediment to the circulation continues. A low sort of inflammation is set up, the œdematous swelling and the tension are aggravated, and this may terminate in mortification.

This is one kind of mortification from ligature. But let us suppose that the ligature is drawn tighter still: that it completely intercepts not only the venous but the arterial circulation. It is evident that the part below the ligature, being altogether deprived of that supply of scarlet blood which is necessary to the maintenance of vitality, must lose its vitality; and this, then, is another way in which a ligature produces mortification.

In the course of your practice you will meet with numerous cases illustrative of the different effects of ligatures according to the degree of constriction which they occasion. Thus, a woman has a femoral hernia. A large portion of intestine is protruded through the narrow crural ring in the act of coughing. The ligature is as tight as possible. The strangulation is complete. The arterial circulation as well as the venous is completely obstructed. If you perform the operation for strangulated hernia on such a patient, even in half an hour, you may find the intestine dead. But if (as generally happens) the degree of constriction is less, in consequence of the opening being larger, or the protruded intestine being smaller in quantity, then the venous circulation is obstructed more than the arterial; there is no mortification immediately: there is venous congestion, followed by inflammation, which may end in mortification in the course of two or three days, or, perhaps, not until after the lapse of a longer period. A man has a phimosis. He pulls back the prepuce, and the orifice becomes a stricture behind the *corona glandis*. There is venous congestion. The glans is swollen, assumes a purple colour, then becomes exceedingly inflamed, and that inflammation is followed by mortification. Again, a patient has internal piles. They protrude at the anus; the sphincter muscle acts spasmodically upon them. They cannot be pushed back through the sphincter; the return of venous blood is prevented; they swell, inflame, and, in the course of a few days, they mortify. By and by the slough drops off, and the disease is cured.

You will now understand the principle which ought to be kept in view when we use ligatures in surgical operations. You cure



internal piles by a ligature. If you draw the ligature only moderately tight, you do not kill them at once: they swell: they inflame: they may die at last, but not till after a painful and tedious process. But if the ligature be drawn as tight as possible, it stops the flow of the arterial as well as of the venous blood, and the piles die directly. This is the way in which a ligature should be applied in almost all cases of surgical operation: it should be drawn as tight as possible. In dealing with piles, or *nævi*, or tumours of the tongue, the tighter you draw the ligature the sooner the sufferings of the patient are over. If you do not draw it tight, he suffers for a very long time, and very greatly; nay, perhaps severe constitutional symptoms may ensue.

I have said that when you apply a ligature in a surgical operation, your object should be to stop the flow of arterial blood at once; and you might suppose that if the ligature was kept on for half an hour, or an hour, that would be sufficient; that the part being deprived of the flow of arterial blood for such a time it would certainly lose its vitality. But this is not exactly the case. You apply a ligature round an artery, draw it as tight as you can; it divides the middle and inner coats, but only compresses the outer coat. It makes a slough of a little piece of the latter; and when the ligature comes away at the end of ten days, or a fortnight, you find the slough in it. But if you cut off the ligature in half an hour, or an hour—an experiment which has frequently been made—there is no slough. The artery may be obliterated, or it may not, by the effusion of lymph; but the piece of the outer coat that was included in the ligature recovers itself: at least it does not come away as a slough. I once had occasion to observe the same thing illustrated on a larger scale. I had a patient with a malignant tumour of the tongue, which, according to the method suggested by Sir Everard Home, I determined to remove by ligature. I drew the double ligature as tight as I could; and when I saw the patient half an hour afterwards, the piece of tongue included in the ligature was quite livid and apparently dead. I saw him again in three or four hours, and found him suffering a great deal of pain and inconvenience. It occurred to me that the piece of the tongue had been dead for some time, and that I should, perhaps, give relief by cutting off the ligature. With some little trouble I succeeded, but, to my great annoyance, the next day I found the whole piece, which appeared to be dead, alive again. The ligature, therefore, in surgical operations, must be drawn as tight as possible, and then left on until it is separated by a natural process.

#### MORTIFICATION FROM PRESSURE.

Parts may be killed by pressure. The mode of death here is nearly the same as when parts are killed by ligature. The difference being simply this: the pressure is like a ligature applied to a broad surface, operating not on the arterial and venous trunks, but on all the small vessels and capillaries. Mortification from pressure is

chiefly observable when the pressure is made on parts which lie over a bone where there is no cushion of flesh between the skin and the bone. If the pressure be very tight, it may produce mortification immediately. I remember that when I was a student, a man came into the hospital with a fracture of the leg. The surgeon applied splints, and drew a bandage over them round the foot as tight as possible. The next day the man was in a great deal of pain and suffering. The bandage was removed, but it had already occasioned a broad slough of the skin over the instep. I have in other instances seen sloughs produced in the same manner, as it were instantaneously, in consequence of bandages being applied too tight.

But in the great number of cases where mortification is the result of pressure, it does not occur immediately, but after the lapse of some time; and it is not a direct but a secondary consequence of the pressure. A man, for instance, is bed-ridden; he lies on a hard mattress; he becomes very thin; the skin over the os sacrum becomes tender to the touch, it inflames, assuming a dark red colour; vesications form upon it; the inflammation goes on, and ends in mortification. Hence, though pressure may produce immediate mortification in some instances, yet in ordinary cases it does so by causing inflammation first, which inflammation, the pressure being continued, ends in the same manner.

This kind of mortification from pressure takes place under certain circumstances more readily than under others. A man is weakened by continued fever, and, from the state of debility in which he then is, pressure on the skin over the os sacrum and other projecting parts of bone will produce mortification, while it would not produce it if he were in vigour and health. After injuries of the spinal cord, mortification from pressure is very readily induced. A man has the spinal cord torn through in the middle of the back; and you find, almost before you suspect that there is any thing wrong, a great slough over the sacrum. Nay, the pressure of the mattresses against the ankles will, in such cases, produce mortification. I have known mortification to begin in the ankle within twenty-four hours after an injury of the spine; and a remarkable circumstance it seems to be, that injuries of the spinal cord should thus lessen the vital powers, so as to make the patient liable to mortification, when we consider how many circumstances there are that would lead us to doubt whether the nerves have any influence over the capillary circulation. The circulation, viewed by a microscope, in a frog's foot, goes on just the same whether the nerves are divided or not. In an experiment which I was making on poisons, I divided all the nerves in a dog's axilla; I then divided all the skin which was attached to the anterior extremity, and then the muscles and cellular membrane, so that there was an absolute want of union between the extremity and the trunk, except by means of the axillary artery and vein, which I left untouched. The animal, at the expiration of twenty-four hours, was killed; but the limb maintained its vitality perfectly all the time. In spite, however, of this and of other circumstances which I might mention of the same kind, a concussion of the spinal marrow makes



the patient liable—and sometimes almost immediately—to mortification of the parts below.

Patients are more or less liable to mortification from pressure, accordingly as they are more or less emaciated. A man with a good cushion of fat between the skin and the os sacrum, or the skin and the great trochanter, is not so liable to the formation of sloughs in those parts as a thin one; and that for obvious reasons.

When you suspect that pressure on any part is so great as to be likely to occasion mortification, you can do nothing but remove the pressure. When a bandage is placed in a case of fracture, you must remove it as soon as you suspect that the swelling of the parts has made it very tight, lest mortification should follow. When a patient has been so long confined to his bed, that you expect mortification will take place, you must endeavour to guard against it. It is more easy to prevent it than to stop it when it has once begun. How, then, is this to be accomplished? If a patient lies on his back, the skin sloughs over the os sacrum; if on one side then it sloughs over the great trochanter. Endeavour, when you can manage it, to make a patient vary his posture. If he can be shifted, let him lie at one time on his back; at another on his side: nay, let him turn round, and lie occasionally on his face. If you have what they call a prone couch, properly constructed for the purpose, he may, in many instances, use it to great advantage. In one of the worst cases of this kind, when mortification had begun, I used to turn the patient on his face many hours in the day, and with perfect success. But sometimes the patient cannot be shifted. There may be fracture of the thigh, and he must lie always on his back. You must then endeavour to take off the pressure by other means—by an air cushion with a hole in the centre, the tender part over the os sacrum being in the hole of the cushion. But in all cases where you use an expedient of this kind, you should first apply a piece of common soap plaster, spread on calico, over the part, to support it. If you merely place the hole of the cushion under the os sacrum, the skin will bulge into the hole, and the patient will lie as bad as if there were no hole at all, or even worse. The same rule applies to all cases where you use contrivances to take off pressure, as in those of corns and bunions. In cases where you can have recourse to it, the water-bed is very useful in preventing mortification from pressure. Dr. Arnott's hydrostatic or water-bed diffuses the pressure everywhere. When you lie on a mattress, the pressure is thrown on all the prominent parts of the body, and little elsewhere; but in using the water-bed the water rises to fill up the hollow places, and the pressure is not greater on the sacrum than on other parts. No doubt this bed is the best method which has yet been contrived for preventing mortification from pressure—the only objection to it is, that it is not applicable to all cases. In cases of compound fracture of the thigh or leg, for example, it would not give sufficient steadiness to the injured limb.

But another plan may be adopted to prevent mortification from pressure—that is, to prevent the inflammation which precedes it. The thicker the cuticle the more it will protect the parts beneath it.



You may, if you attend to it in time, add to the thickness of the cuticle by stimulating the surface of the skin. Nurses know this very well, for when patients are bed-ridden, they wash the parts subjected to pressure with brandy. What is better, is a lotion composed of two grains of oxymuriate of mercury to an ounce of proof spirits. When you think that a patient is likely to be confined so long in bed that there may be mortification from pressure, wash the parts two or three times a day with this lotion. I have found it useful in other cases where a patient suffers from pressure. A man has a rupture which requires to be supported by a very powerful truss. It galls and frets the skin, and may at last cause inflammation and sloughing; but under the use of the lotion, a thicker cuticle is generated and this mischief is avoided.

The sores which remain after the separation of a slough produced by pressure, are to be treated like common sores; this being kept in view, the skin will slough again if pressure be continued. You must, if possible, contrive to take the pressure off these sores; but, unfortunately, it is not always possible for you to do so, and in spite of all your care and trouble, slough will form after slough, exposing the sacrum or trochanter, or other bony structures, whatever they may be.

#### MORTIFICATION FROM CONTUSIONS AND TRAUMATIC GANGRENE.

I now come to speak of mortification from a blow or other mechanical severe injury. It may be said that pressure is mechanical injury, but I now speak of sudden injury operating for a short space of time such as a contusion or a wound.

The effect of mechanical injury may be to produce mortification, which is confined to the parts actually injured. For instance, a man gets a kick on the shin, and the next day there is a slough, and the skin is dead, just where he was kicked. Why? Because the kick bruised the skin against the bone, ruptured the capillary vessels, and destroyed the organization in the part, so that life could not go on. But here the mortification is confined to the part actually injured. A remarkable circumstance happens in some of these cases. The cellular membrane has not so much vitality as the skin, and therefore perishes more easily. A blow will disorganize the cellular membrane which will not disorganize the skin. A man came into the hospital who had had a severe blow on the instep; there was a purple appearance, but no very extensive ecchymosis, and I thought nothing of it. The next day I found the part inflamed, the following day there was a good deal of swelling, and on the third day the skin was beginning to slough. I divided the skin with a lancet, and found a large slough on the cellular membrane. The blow had pressed the skin and the cellular membrane against the bones of the instep, and had killed the latter but not the former. The slough of the cellular membrane would have been followed by an extensive sloughing of the skin if, acting on the principle explained in my last lecture, had I not divided the latter freely. In cases in which you

suspect that the cellular membrane may be destroyed while the skin is not, you must watch the patient, and if there be swelling and inflammation you should divide the skin, and save it from perishing as far as you can, though you cannot save it entirely.

But in other cases the mortification is not confined to the part actually injured, but may extend to the greater part of the limb. These are the cases to which the name of traumatic gangrene is applied. A man sustains a severe injury in the leg, and a great part of it mortifies. It would appear that the mode in which traumatic gangrene is produced varies in different cases. Mr. Guthrie, for example, describes a case in which mortification of the leg took place as high up as the knee, in consequence of a blow on the back of the leg. The limb was amputated, and when he came to dissect the parts it was found that the blow had lacerated the lining membrane of the popliteal artery, in consequence of which there had been effusion of lymph into the cavity of that vessel, stopping it up. That alone might not have produced mortification, but the anterior and posterior tibial arteries were torn through also, and the result of this double injury was that the limb, not getting a proper supply of blood, perished. In this case the pressure of extravasated blood might have contributed, in some degree, to produce the mortification. But local extravasation of blood, if it exist to a great extent, is, of itself, sufficient to produce this effect. When I was house-surgeon, a man was brought into this hospital with some kind of tumour about the groin, but no pulsation was felt in it, and no one suspected that it was an aneurism. There was severe pain felt in the thigh, evidently arising from pressure on the anterior crural nerve, and the event proved that there was an aneurism, though it had not been indicated by the usual signs. It burst one day into the cellular membrane; the man screamed out as if he was being murdered, so horrible was the pain. The next day there was gangrene as high up as the groin, and the man died in about a fortnight. On dissection we discovered an aneurism of the internal iliac artery, which had burst under Poupart's ligament. The extravasation of blood had prevented the circulation from being carried on in the limb, and hence it mortified. There was a man in the hospital long ago, who had popliteal aneurism. I had fixed the day for tying the femoral artery; but on the day previous to this the aneurism burst into the calf of the leg, and the next day the limb was in a state of mortification; so that instead of tying the artery I amputated the leg. The vessels below were all quite pervious, and the circulation would have gone on very well but for the pressure produced upon them by the immense extravasation of blood. No doubt, in many cases of traumatic gangrene, this is one principal cause of mortification.

But traumatic gangrene takes place in another way, and, to illustrate what I mean, I will mention the circumstance of a case which occurred in the hospital some few years since. A poor boy was jumping over a ditch, and came with considerable force upon his feet. There was a compound fracture of the leg above the ankle.



The external wound was trifling, but it was evident that a great shock had been given to the foot and leg. Four days afterwards the limb was in a state of mortification as high as the knee, and the mortification seemed to be extending to the thigh. I amputated the thigh as high up as I could, near to the great trochanter. We dissected the limb very carefully. The large arteries, and also the large veins, were quite pervious. There was, in fact, no injury whatever to the arterial trunks; but the cellular membrane, the muscles, and, in short, all the structures, seemed to be more or less disorganized. There were spots of ecchymosis in the large nerves; the periosteum was universally detached from the fibula, and very nearly so from the tibia. How does the periosteum adhere to the bones? By the small vessels. It is evident, then, that the shock of the accident must have occasioned a great injury to the small vessels connecting the periosteum to the tibia and fibula, and the probability is, that the same kind of injury inflicted on all the capillary vessels of the limb laid the foundation for the mortification. I do not see how the occurrence of mortification in cases like this can otherwise be explained.

It has been a sort of *dictum* of the schools of surgery, that you should not amputate while mortification is going on; and certainly, when there is mortification from ossified arteries (as I shall hereafter explain), or where there is mortification from inflammation, you ought to wait for the mortification being stopped, and for the formation of a distinct line of separation, before you proceed to an operation. But it must have been palpable to every body who took the pains to consider the subject, that this rule would not apply to all cases of mortification. For example, a man has a strangulated hernia; when you open the sac you find the omentum strangulated, a part of it dead, and the mortification still extending. You would not hesitate in a case like this to cut off the dead and dying omentum. If piles were undergoing the process of mortification from being strangulated by the sphincter muscle, you would not hesitate to cut them off. You may conceive many other cases, in which the cause of mortification is local, and to which the general rule which I have just mentioned does not apply. Baron Larrey has the credit of having pointed out more distinctly than had been done before, that where there is mortification from local injury, you may venture to amputate, though the mortification is still spreading. But I apprehend that the operation must be had recourse to at once, and that the case admits of no delay. If, in consequence of local injury to a limb, mortification has begun, but has not yet produced any severe shock on the system, there you may amputate. But where the mortification has been going on for some days, so that the system has begun to be influenced by it, the pulse getting weak, perhaps intermitting, and with great prostration of strength, in such a case you must not venture to amputate. Under such circumstances it is probable that the system is not in a state to bear the additional shock of the operation. However, I believe that cases enough may be adduced to prove that Baron Larrey's rule of not waiting to amputate till the mortification has stopped, is applicable in a great number of instances



where the disease arises from local injury. It is good in theory, and there is now sufficient experience to enable us to say that it is good in practice also.

---

## LECTURE VI.

### ON MORTIFICATION. (*Continued.*)

#### DESTRUCTION OF PARTS BY CAUSTICS.

PARTS may be destroyed by the application of various substances, which exercise a chemical action on the materials of which their organization is composed. We call these substances *caustics*, and sometimes *escharotics*. This is a subject of especial interest in practical surgery; and in considering it I shall not confine myself to the *modus operandi* of caustics, but I shall extend my observations to the modes of using them, and explain some of the principal occasions on which you may, in the treatment of diseases, have recourse to them with advantage. I have no scruples in doing this, as I am not restricted by the rules of a systematic course of lectures, and need have no object in view, except that of making these discourses as useful to you as possible.

I have said that caustics act chemically, destroying in this manner the organization of the parts to which they are applied. If there be any exception to this general rule, it is in the case of *arsenic*, in the operation of which there seems to be something peculiar. I make this observation, because it has appeared to me, that while other caustics have a manifest action on the dead body, it is not so with arsenic. I very much suspect that arsenic acts merely on the fluids, while ordinary caustics act on the fluids and solids also. However, I offer this to you as a conjecture, and as a matter deserving of further inquiry, and not as a well-established fact. All other caustics which I have made the subject of experiment produce a distinct alteration in the condition of the dead body, though different in appearance from what they produce on the living, in which they operate on the fluids as well as on the solids, and in which the blood moving in the small vessels conveys their influence beyond the surface to which they are actually applied.

A great variety of chemical agents may be employed as caustics. It would be an endless task for me to describe all of those with which I am myself acquainted; and if I were to do so, a multitude of others would be left unnoticed, of which I have no experience. I shall only speak of those which we are in the common habit of employing, and the right use of which will, if I am not mistaken, enable you to accomplish all that can be accomplished in this way.

There is some difference in the action of different caustics: some

act slowly, others rapidly; some produce much pain, others comparatively little pain: the pain caused by some is very severe for a short time, by others less severe, but of longer duration: some destroy a part to a much greater extent than others: the slough made by one kind of caustic will separate much sooner than that made by another. The period occupied by the separation of the slough seems to depend on the quantity of surrounding inflammation. If the inflammation of the margin be considerable, the slough is soon thrown off; whereas, if it be trifling, it may remain attached for a long time. If the caustic be applied merely to granulations, the slough separates much sooner than if it be applied to the skin or to other parts of original structure.

There is no class of cases in which you will have such frequent occasion to apply caustic, as those of exuberant granulations, such as are commonly called *proud flesh*. In some cases in which there is little disposition to form new skin, the granulations rising above the level of the skin in the neighbourhood, it is important that they should be destroyed. On these occasions we commonly use the nitrate of silver, and it is quite a sufficient caustic for this purpose. You rub the part with it pretty freely, and the next day the exuberant granulations have disappeared, partly by sloughing, and partly by absorption. There are, however, occasions on which you will find a great irregular mass of unhealthy granulations beyond what the nitrate of silver will easily destroy. Such granulations as those to which I now allude are frequently generated over an old carious surface of bone, and you will then find that the ointment which I am going to mention makes an excellent caustic application for them. It is a very old prescription, but not the worse on that account. The ointment consists of verdigris, sulphate of copper, nitric oxide of mercury, of each two drachms, oxymuriate of mercury one drachm, with as much hog's lard as is necessary to blend them together. This may be spread on lint, and one or two applications will be sufficient to destroy a very large mass of fungous granulations.

One mode of making an issue is by means of caustic, and for this purpose we generally employ caustic potash (*potassa fusa*), or strong nitric acid. The former may be rubbed on the part until it has penetrated through the skin, and that is enough. If you continue rubbing it afterwards it goes deeper than is necessary, and generally gives rise to considerable bleeding. This caustic continues to spread after you have ceased to apply it, and you must make an allowance for this when you use it, otherwise you make too large a slough. The concentrated nitric acid spreads a little after it has been applied, but not so much as the caustic potash. The nitric acid is applied by means of lint on the end of a probe dipped in the acid, and rubbed for several minutes on the surface. I have seen issues made by the nitrate of silver made into an ointment and laid upon the part. It makes a slough of the skin, and as far as the mere issue is concerned, will do very well; but it is very slow in its action, and causes ten times the pain produced by other caustics.

When an issue is open you want to keep it so, while, perhaps, it has a tendency to heal; and there are other occasions on which



something is required to prevent sores or the orifice of a sinus from healing. A man may have a small abscess by the side of the anus. If the orifice heals, the matter collects within, and a large abscess is formed, which should be prevented if possible. In these cases the best thing that can be done is to touch the margin of the issue, or the orifice of the sinus, now and then with the caustic potash. It makes a slough which takes some time to come away, and the application of it once in ten days or a fortnight will answer that purpose. I have seen the nitrate of silver frequently used with the same intention; but in fact it promotes cicatrization, and heals the sore or the sinus, instead of keeping it open.

There is an occasion on which you will not unfrequently have occasion to apply caustic, and where it is very material, indeed, that it should be done in a careful and scientific manner. I refer to cases in which a person has been bitten by a rabid dog, or a dog supposed to be rabid. It is evident that in either case the treatment must be just the same. On these occasions it is better to excise the part thoroughly and to take out a good deal of the surrounding parts. But it sometimes happens that this cannot be very easily accomplished. A person, for instance, is bitten in the palm of the hand; the dog's tooth penetrates into it, and it would be a very serious thing to cut out tendons, nerves, and every thing else down to the metacarpal bones. Or it may be that you had supposed that you had cut out the part completely, and yet find on examination that the tooth has penetrated further, where you cannot very easily follow it with the knife. On these and similar occasions, you can do nothing better than trust to the application of caustics. Mr. Youatt, the veterinary surgeon, who has had great dealings with rabid dogs, tells me that when he has been bitten he has always applied the nitrate of silver, and he is alive and well now: so that in his case this kind of caustic has answered the intended purpose. But, then, he applies it at the very instant when he is bitten; whereas very few of your patients have the nitrate of silver in their pocket or could apply it if they had. The best caustic, I apprehend, to use on these occasions, is the caustic potash; and for this reason; that it dissolves the parts with which it comes in contact, and that then the dissolved caustic penetrates still further beyond the part to which it has been actually applied. If the tooth penetrate into the cellular membrane, some of the saliva may have gone to the cells beyond; and if you apply the nitrate of silver, or the nitric acid, these will coagulate the fluids and harden the solids, and they will not diffuse themselves, like the caustic potash. A convenient way of applying the latter on these and some other occasions is this—melt some of the caustic potash in a silver or platina spoon, and when melted dip into it the blunt end of a probe, and it will come out with a varnish of the caustic upon it; dip it in again and again, until a button of caustic of sufficient size is formed upon it. By means of a probe thus armed you may carry the caustic into a narrow wound, so that you are sure it will penetrate wherever the dog's tooth has penetrated; and then, from the particular nature



of the caustic (as I have explained), you may be certain that it will penetrate still further, and as far as the saliva can have reached.

Caustics may often be used very advantageously for the purpose of destroying diseased lymphatic glands. A man has chronic inflammation and enlargement of the glands in the groin, forming a considerable tumour. The skin over them ulcerates, forming at last a large ill-conditioned ulcer, which will not heal. What is the reason of this? Because no ulcer will heal unless it has a healthy basis, and here the basis is a mass of diseased glands. These diseased glands may take a long time to recover themselves—not merely months, but one or two years, and as there are plenty of glands to spare, there is no harm in destroying them. You may effect this by the caustic potash, but not very well; you want some kind of caustic which will lie in the substance of the diseased glands and destroy their inner structure as well as their outer surface. The form of caustic I am going to mention was used by the late Mr. Pearson, from whom I had the prescription. It consists of one ounce of crumb of bread, two drachms of oxy muriate of mercury, one drachm of red oxide of lead. These are to be mixed together, kneaded with the fingers, and formed into a sort of paste. The paste should be rolled into little conical troches, and these, if left to dry, become hard like bread seals. These troches may be stuck into the enlarged gland like pins into a pincushion. They produce no effect at first, but in the course of a little time they begin to act, and the patient knows this by the pain produced. This lasts for some hours, and if a sufficient number of the troches be employed, the whole of the gland is at once destroyed. If any portion remains not destroyed it is easy to effect it by repeating the process. I do not know whether the red-lead answers any useful purpose; I suppose not, but I found it in the original prescription, and on all occasions where I find a particular prescription to do just what is wanted, I am unwilling to alter it.

Caustic may be applied to various morbid growths; and I am inclined on the whole, when these can be easily destroyed by caustics, to use them in preference to the knife, and for these reasons:—*First*, the former are on the whole much less formidable to the patient; *secondly*, if I am not very much mistaken, there is less chance of any ill consequences from the application of caustic than from even a small operation with a knife. For example, you very seldom find an attack of erysipelas follow the use of caustic, certainly much less frequently than after the use of the knife. Again; the slightest wound in certain constitutions will be followed by that diffuse inflammation of the cellular membrane, terminating in gangrene, which I noticed in a former lecture. But I do not recollect that I ever saw the same thing to happen after the use of caustic. The cases, however, to which caustics are applicable, are only those in which the morbid growth is of small size, and placed quite superficially. Undoubtedly it would cause too great a shock to the constitution, and too much suffering to the patient, for him to have a morbid growth of very large size destroyed in this manner.

There is a very common kind of morbid growth, in the form of

warts and condylomata, which occur in women about the pudenda, and in men on the glans penis and about the anus. These are very easily destroyed by caustic. The nitrate of silver will destroy warts on the glans penis very well, if they are of limited extent, but not when they are collected in large masses. In such cases as these strong nitric acid may be employed. Rub the warts with it, and repeat the application from time to time till the whole are destroyed. The following application will answer the purpose very well in cases where the warts are not very extensive—a drachm of muriatic acid, added to three drachms of muriatic tincture of iron. This destroys the warts very well, but not very rapidly. The application must be repeated every day for some time, till the warts shrivel, decay and drop off. There is a very common escharotic, and a very useful one for warts, on the glans penis or pudenda, where they do not exist to a great extent—namely, equal parts of powdered savine and verdigris. This being sprinkled on the warts destroys them, partly by making them slough, and partly by promoting their absorption. Another excellent caustic, on this and some other occasions, is this: take half an ounce of strong nitric acid, add to it half a drachm of white oxide of arsenic. It makes a beautiful blue solution, consisting of the nitrate of arsenic dissolved in nitric acid. This may be applied to the warts by means of a probe armed with lint; and it has a double operation. The nitric acid acts immediately, and, when it has done acting, the slough contains a certain quantity of arsenic, which continues to operate afterwards. Having this double action you may suppose that it is a very efficient caustic.

On this occasion, as on many others on which you use nitric acid, without care, you will be in danger of burning the neighbouring textures. A woman who has warts on the pudenda wishes to have them destroyed, but she has no desire that the skin in the neighbourhood should be burned. This, however, will happen, unless you take care to prevent it. If you use nitric acid you should have at hand a solution of the bicarbonate of potash, by applying which you may neutralize the acid as it flows beyond the surface on which it is intended to act, and stop its operation. I may observe here, once for all, that there are many occasions when it is necessary to use similar precautions. Indeed, almost always when you use a caustic, it is prudent to have some counter-agent at hand to stop its action if it goes on a wrong part. Acids may be neutralized by alkalis; caustic potash may be neutralized by vinegar. If you are afraid of nitrate of silver burning the neighbouring parts, its action may be neutralized by common olive oil; a solution of the bicarbonate of potash will decompose chloride of zinc—and so with other caustics.

Caustic may be used with great advantage in many cases for destroying the congenital vascular tumours which we see so frequently in children—*nævi*, as they are sometimes termed.

There are small vascular spots, not exactly congenital, though they occur in early life, which present themselves on the face of children, and which not unfrequently are objects of some anxiety, especially in the higher classes of society, as they form rather ugly red specks



on the face. On examining one of them with a lens you see one large vessel in the centre, and small branches radiating from it. These spots, in most instances, if let alone, will disappear spontaneously. If, however, this does not happen, you may destroy them in the following manner. The principal vessel is near the surface. Touch it through the cuticle for an instant with strong nitric acid, and it will contract and become obliterated. This is best done by means of a pointed piece of glass, which they sell as a sort of toy under the name of a glass pen. It is in truth as bad a pen as possible, but it answers this purpose, and some other purposes in surgery, extremely well. If the acid flows over the cheek, you may neutralize it by a little bicarbonate of potash. But this will not destroy these vascular stars in every instance; and there is another and still a more certain method of proceeding. Puncture the principal vessel from which the others radiate, with a lancet, and then introduce into the puncture, merely for a single instant, a very fine piece, scraped like a pencil, so as to have a sharp point of the caustic potash. Touch it for a moment only; that will be quite sufficient. But even after so slight an application, you will see that the caustic has also burned the margin of the skin, and unless you adopt other measures a trifling mark will be left. For this nothing is required but the application of a small piece of lint soaked in vinegar.

There are some congenital nævi which are altogether cutaneous. There is a very intricate plexus of little vessels filled with scarlet blood in the skin, which, being elevated above the surface of the surrounding skin, assumes an appearance which may be compared to that of a raspberry. If a nævus of this kind be of large size it must be removed by the knife or by a ligature, but if it be small, you may destroy it very well with caustic. You should not employ the caustic potash, for that would produce bleeding, but rather have recourse to nitric acid, which destroys the nævus sufficiently, while at the same time it coagulates the blood in the small vessels, rendering the nævus more solid than it was before. With a bit of stick, or a probe armed with lint, and dipped in the strong nitric acid, paint the surface of the nævus, taking care that you include the whole, but that you do not burn the neighbouring parts. This makes a slough of the surface of the nævus, and destroys it at the same time that it coagulates the blood in the small vessels below, and thus renders them impervious. But, as I stated just now, this method is applicable only where the nævi are of small size.

There are subcutaneous nævi formed by vascular tumors in the texture *under* the skin, and not *in* the skin itself. These put on a different appearance from the cutaneous nævi before mentioned. The blood here is seen not of a scarlet, but of a purple colour, because the skin lies over it. These may be destroyed by caustic when they are of small size; and even when they are of large size, if it be a great object to avoid the scar which must exist after the removal of them by the knife or by ligature. These vascular nævi have sometimes been cured by vaccination. Half a dozen punctures have been made with a lancet armed with vaccine lymph. The



pustules being crowded together in the nævus, a good deal of inflammation has ensued, with some degree of sloughing, and altogether the nævus has been cured. But you cannot depend on this method—at least so I am informed by those who have practised it, for I have not tried it much myself. But you may, on the same principle, very easily cure a nævus of this kind by caustic. For this purpose I have a very narrow lancet, perhaps about the eighth of an inch in width: I introduce it into the middle of the nævus, and move it in different directions, so as to cut to pieces, as it were, its vascular structure. I then have a probe armed by dipping the round end into the nitrate of silver melted in a platina spoon. This is to be introduced into the puncture made by the narrow lancet, and moved about, so that wherever the lancet has divided the blood-vessels, this may penetrate. It causes inflammation and sloughing, at the same time obliterating the vessels beyond the margin of the slough. When the slough is separated, there is a slight discharge of pus for a few days, and if the tumour be of small size you will find that it is cured; but if it be large the application must be repeated. I have used this on several occasions with great advantage, especially when the tumour has been on the face, where it was a great object not to destroy the skin. If you remove one of these tumours either by the knife or by ligature, you must in either case leave a large cicatrix. But by applying the caustic in the way which I have mentioned you save the skin that lies above it. I was last year called to see a little child that had one of these subcutaneous nævi at the end of the nose, which gave it a very ugly appearance. A good part of the *alæ* of the nose was involved in the tumor, and to have cut it out would have disfigured the child for life. I treated it according to the method which I have just explained. Several operations were required, but they succeeded perfectly; the child is quite cured of the nævus, and I will not say that you see no mark at the end of the nose, but there is so little that, unless your attention were called to it, you would not know that any thing had happened. I have destroyed an extensive nævus covering a very large portion of the face in the same manner, there being very little or no scar afterwards.

There is another class of cases which may be very conveniently treated with caustic, and in general much better than with the knife. I mean those tumours which I have been in the habit of calling half malignant, and which occur on the face chiefly of elderly people. A man has a soft tumour upon the face, covered by a smooth skin, and not exactly a wart. On cutting into it you find it consists of a brown solid substance, not very highly organized. A tumour of this kind may remain on the face unaltered for years, and then when the patient gets old, it may begin to ulcerate. The ulcer spreads slowly but constantly, and if it be left alone it may destroy the whole of the cheek, the bones of the face, and ultimately the patient's life; but it may take some years to run this course. So far these tumours in the face, and these ulcers, are to be considered as malignant. Nevertheless they are not like fungus hæmatodes or cancer, and for this reason: that the disease is entirely local. It does not affect the

lymphatic glands, nor do similar tumours appear in other parts of the body. I have generally been in the habit of destroying these tumours with caustic, and when they are of small size I prefer caustic to the knife, for the reasons I have formerly mentioned. If a patient applies to you with one of these tumours as large as a pea or a horse-bean, not ulcerated, but beginning to increase in size, you may proceed in the following manner. First, make a crucial incision through the substance of the tumour with a lancet. Then, as soon as the hæmorrhage has ceased, apply the caustic potash in the incision. You may destroy the tumour if you please by letting the caustic act on the skin without using a lancet, but its destruction is much more easily accomplished in the manner which I have suggested. One application is generally sufficient; the slough comes away, and the sore heals. Perhaps it will be asked—Is there not this objection to the use of caustic; namely, that some time is necessary for the slough to come away—then a further time for the healing of the wound? and does not all this make the process of cure more tedious than it would be if the knife were used instead? The fact is, that a wound always heals much more readily after the application of caustic than after the use of the knife. Take two cases—if you destroy one tumour of a given size by the knife, and then the other, supposed to be of the same size, by caustic, in spite of the time occupied by the separation of the slough, the sore in the former case will be healed sooner than that in the latter.

If the tumour be ulcerated, this is favourable rather than otherwise to the use of the caustic, because it saves the trouble of dividing the part with a lancet. When, however, the tumour has been of long standing, and has produced an extensive ulceration, the caustic potash will not well answer the purpose. There will be so much bleeding from the large surface that the caustic will expend its action on the blood, and will produce but little effect on the disease. You may then destroy the tumour with nitric acid, but the best applications, according to my experience, are the chloride of zinc or arsenic. There is, however, one very serious objection to arsenical caustics applied to a large surface; the arsenic is sometimes absorbed, producing severe constitutional symptoms. There was, in former times, a Miss Plunkett, a quack, who pretended to cure cancer, and it was known afterwards that her secret consisted in the application of arsenical caustics. An old medical practitioner, whom I knew in the early part of my professional life, informed me that it had fallen to his lot to see many of Miss Plunkett's patients, and that after the application of her caustics many of them died, from what seemed to be inflammation of the bowels. It is, indeed, notorious that the topical application of caustic to a great extent is very likely to produce the same poisonous effects as arise from an absorption of arsenic from the alimentary canal. The chloride of zinc acts merely locally; it is not absorbed into the constitution, and its use is not attended with any constitutional disturbance, nor productive of the smallest danger. I generally use the chloride of zinc by mixing it with an equal quantity of flour. It deliquesces from the moisture of the atmosphere, or you



may add a little water to make it into a paste, which is to be spread on lint. If you want a deep slough, spread the paste thick; if a thin one, spread it as thin as you please. The depth of the slough depends on the thickness of the paste, and the thicker it is the longer the action of it continues. The application of the chloride gives the patient a good deal of pain, which you must make him endure as well as you can by giving him opium. Some patients suffer much more than others; some will not require any opium at all, others will require it in great abundance; but when the action of the caustic has ceased, there is an end to the pain, and the slough comes away in a few days. If the ulcerated surface be of large size, and the disease of much depth, a second application may be required. When the disease is situated over a bone, I generally like to procure a thin exfoliation of the latter, and the caustic accomplishes this very well, acting on the bone, but not to any great depth. The exfoliation takes place in a few weeks, and when the thin layer of dead bone has come away, healthy granulations are seen beneath. Sometimes, after having destroyed a great part of an ulcerated tumour with chloride of zinc, a small portion of it may be left here and there, to which you may apply the caustic potash, or solution of arsenic in nitric acid. This solution of arsenic, or any other preparation of arsenic, may be applied to a small surface very safely. Observe that what I object to is its application to a very large surface.

Ulcerated tumours, similar to those which occur on the face, are sometimes met with on the scalp, and these too may be destroyed with caustic. You must, however, apply it in these cases with great caution, and for this reason—if you destroy at once a large piece of the pericranium, the destruction of it is likely to produce a separation of the dura mater from inside the bone. A case of this kind which I saw long ago made a great impression on my mind. A surgeon applied the caustic potash to the scalp with a view to make an issue in a man's head, who was labouring under a headache, and nothing else. He made a slough down to the bone, and exposed a piece of the occiput as large as half a crown, or larger. The patient was soon seized with a set of strange symptoms, and died. It was found that the dura mater had become detached from the inside of the bone just opposite the part where the pericranium was destroyed on the outside; and it was clear that the sloughing of the dura mater was the cause of the man's death. I mention this case to show that you must be cautious in the use of caustic when you apply it to the scalp; but you may apply it in that situation, nevertheless, if you proceed in a prudent manner. I had lately a very successful case of one of these half malignant tumours of the scalp, which was much ulcerated, and had been going on for some years. I applied caustic to the different parts in succession, not making a fresh application until the slough made by the former one had come away. By proceeding in this manner the bone was not killed, except a very thin layer on the surface, and the patient was cured.

You may, with proper precaution, apply caustics to parts situated internally, even to the inside of the mouth, and to the inside of the



female urethra. In that disease which we call *epulis*, a red tumour that looks like the gum, and which becomes connected with it, (though I believe that it really has its origin in one of the alveoli,) you may use caustics with great advantage. It is in vain to destroy the outer part of such a tumour, that is, the part connected with the gum, unless you also destroy the inner part where it originates in the alveolar process also; and from the surgeon not being a ware of this circumstance I have in several instances known repeated operations with the knife, as well as the application of hot iron and caustics, fail. The caustic which I find in general to be most convenient in these particular cases, is the caustic potash. You must fix it at a right angle to the end of a pair of dressing forceps, and secure it well by tying thread round it. The caustic should be scraped small enough to enter the alveolus, the teeth having been previously removed. Having thus destroyed the disease where it originated, you may apply the caustic to that portion which is outside, and connected with the gum. But you will say that it will burn the tongue or the cheek; and so it will, if you are not careful. You must let your assistant hold open the cheek, and while you apply the caustic he must have at hand a brush dipped in vinegar, which he is to apply whenever the caustic spreads beyond where it ought to be applied. I do not recommend this kind of treatment in the case of a large *epulis*, in which it will probably be necessary to take out a portion of the jaw; but it is perfectly applicable to many cases in the early stage of the disease. With a somewhat similar precaution you may apply caustic to destroy the vascular excrescence, to which I have before referred, of the female urethra—a disease first described by Sir Charles Clarke, and of which you will find some account also in my lectures on Diseases of the Urinary Organs. For these cases you should be provided with a silver tube or shield, closed at one end and open on one side: Introduce this into the female urethra, so that the vascular fungus may project into the open side of the tooth, and there apply the caustic. Here also you must trust to your assistant dabbing the neighbouring parts with some liquid which will act as an antidote to the caustic; a solution of bicarbonate of potash, if you use the nitric acid, or vinegar if you use the caustic potash. In general, in these cases, it is better before you use the caustic to remove as much of the excrescence as you can with a pair of scissors.

I have spoken of the application of caustics to some cases of what I have called half malignant disease; but occasionally they may be employed in cases of true malignant disease; such as scirrhus and fungus hæmatodes. If one of these tumours is of large size, it is better to use the knife; in fact you cannot remove it otherwise. But there are instances of smaller tumours in which you may use caustic with great advantage. I will give you an example. A lady consulted me concerning a scirrhus tumour of the breast. The tumour was very small, but there was a scirrhus gland in the axilla, and where there is one scirrhus gland you may be nearly certain that there are several others, though you cannot perceive them through the skin. I did not therefore recommend an operation. She came to town a year

afterwards; the tumour had ulcerated, and there was severe and indeed almost intolerable pain. I applied to the ulcerated surface of the tumour a paste of flower with the chloride of zinc. The tumour was apparently destroyed, and the sore cicatrized. She continued well for a considerable time. Another tumour then showed itself in the neighbourhood of the cicatrix, which was also attended with excessive pain, and that was destroyed in the same manner, as was a third tumour that appeared afterwards. By this treatment her life was prolonged a full year and a half; and during this time she was in a state not of misery, but of comparative comfort, being generally free from pain. She died at last of effusion of fluid into the chest.

A lady, whom I attended last winter, had a fungous growth over the head of the tibia. It had all the appearance of malignant disease, was of considerable size, and was partly ulcerated. There had been a tumour there before, and her country surgeon had removed it, but the disease had returned. I removed it a second time with the knife, and, as far as I could see, I removed not only the diseased structure, but the parts beyond to a considerable extent. The wound appeared quite healthy, and went on healing favourably. Just, however, as it was healed, and when the patient had fixed the day for going out of town, there appeared on the margin of the wound, where there had been nothing before, a tubercle, which seemed to be precisely similar to what the other tumor had been in its origin. I destroyed this tubercle with caustic, and the sore thus made healed. A second and a third appeared, which were also destroyed in the same manner. No others have since shown themselves, and I cannot but entertain some hopes that the disease is really eradicated.

I must not recommend you to use the chloride of zinc without giving you this caution respecting it. Never apply it except where there is an ulcerated surface. If you apply it to the skin, you must first put on a blister to remove the cutis, as otherwise it will scarcely act at all. But even when the cuticle is removed, it will not act for the first twenty-four hours; and it will then begin to produce intolerable pain, which will continue for four or five days. When the tumour is covered with skin, you must use the caustic potash, or nitric acid, first; and when the superficial slough has come away, if the further use of caustic is indicated, the chloride of zinc may be had recourse to.



## LECTURE VII.

ON MORTIFICATION. (*Continued.*)

HOSPITAL GANGRENE—ACTUAL CAUTERY—MORTIFICATION FROM ANIMAL POISONS; FROM COLD; FROM SUDDEN LOSS OF BLOOD; FROM INFLAMMATION OF ARTERIES.

I THINK it worth while to point out another case in addition to those alluded to in the last lecture, in which the destruction of parts by caustic may be resorted to with great advantage. I refer to phagedenic and sloughing sores, whether they be those that occur upon the organs of generation in persons who have been exposed to syphilitic affection, or whether they be those that appear on other parts of the body, to which the term *hospital gangrene* is usually applied. The destruction of the parts by a powerful escharotic frequently seems to destroy the poison on which the phagedena and sloughing depends. The best caustic for this purpose is the concentrated nitric acid, applied so as to make a slough of the diseased surface, and extending to the parts just beyond it. The destruction of them to a greater depth than this is unnecessary. This method of treatment was first had recourse to, if I remember right, by Mr. Welbank, who wrote a very interesting paper on the subject.

I have taken this opportunity of speaking of some of the principal cases in surgery to which the destruction of parts by caustic is applicable; but you will find a great number of others in practice in which you may employ them with advantage. I need not, however, occupy your time further on this part of our subject. The observations which I have already offered will be easily applied to other cases; and will, I trust, be found sufficient to initiate you in this department of surgery.

## DESTRUCTION OF PARTS BY HEAT:—THE ACTUAL CAUTERY.

The organization of the living body may be destroyed by the application of intense heat. A moderate degree of heat does not at once destroy vitality: it produces a peculiar kind of inflammation, with vesication of the skin; but a great degree of heat destroys at once the vitality of the part to which it is applied. Of course, the action of heat is altogether chemical. No part will live if its organization be destroyed; and heat destroys the organization. There is one thing worthy of notice respecting the slough made by a hot iron: it is separated sooner than the slough made by caustic—that is, the two sloughs being of the same extent, that which is made by a hot iron is separated at an earlier period than that made by caustic.



The reason of this is sufficiently evident. If you look at the injured part there is a much greater degree of inflammation round the slough made by the former than there is round that made by the latter.

The destruction of a part by the application of heat to a small extent is attended with no constitutional disturbance; but if it be to a great extent, the constitution is affected in proportion to the quantity of parts destroyed. This, however, is remarkable—that where on the surface of the body there is an absolute destruction of the skin by intense heat, the constitution often suffers, in the first instance, much less than if a slighter degree of heat had been applied to the same extent of surface. You will have frequent opportunities of verifying this observation, if you watch the comparative effects of burns and scalds in the cases admitted into the hospital. I have been surprised sometimes to find, where a great deal of skin has been completely destroyed, how little the constitution has resented the injury immediately after it had been inflicted; but it resents it enough afterwards, and when the period arrives at which the slough should be thrown off, then the general system suffers. I remember a lady who had both her arms burned, so that nearly the whole skin of each upper extremity was completely dead; yet her constitution seemed almost unconscious of the shock. When, however, the time came, at which the slough should have been separated, she began all at once to sink, and died in a day or two.

The actual cautery may be used for surgical purposes on the same principle as caustic; and there is one occasion on which the former will certainly do what the latter will not effectually accomplish—it will stop hæmorrhage. In some cases of dangerous hæmorrhage from a great quantity of small vessels, or from large vessels, which cannot be secured on account of their being deeply seated, the actual cautery is very serviceable. I have often found it useful on these occasions; but otherwise I have not much had recourse to it. I have indeed employed it on other occasions formerly, but I did not find it do any thing which caustics would not have done as well or better, and it is much more alarming, much more frightful both to the patient and to bystanders. It was the habit of surgeons here fifty or sixty years ago, to use the actual cautery to a great extent, and it appears to be one of the many proofs of the advancement of English surgery that we have got rid of this rude piece of farriery.

#### MORTIFICATION FROM ANIMAL POISONS.

I mentioned in a former lecture that I had seen a man who died of extensive sloughing of the cellular membrane, after the sting of a bee. I stated that I had attributed this chiefly to his being of a bad constitution, though, perhaps, something might be attributed to the influence of the animal poison. My reason for making the latter observation was this: there are certain animal poisons which have the effect of producing mortification, especially of the cellular membrane. There is a work of the Abbé Fontana, in which he describes

a great number of experiments on the smaller animals, made with the poison of the viper, and the principal local effect that he observed was gangrene of the bitten limb. When I was first assistant-surgeon, a man was brought into this hospital under the following circumstances. A rattlesnake was exhibited as a sight in Piccadilly, and this poor fellow went to see it. He was a carpenter, and having dropped his rule into the rattlesnake's cage, he introduced his hand to take it out, and the snake bit him. He was immediately brought to the hospital, in a state approaching to that of syncope, with violent pain extending up the arm. The next day the whole arm was swollen, and the skin looked purple; there were vesications upon it as if sloughing were going on in the subcutaneous cellular membrane. The man lingered here for nearly three weeks, and then died. At the time of his death, there was extensive mortification of the skin of the forearm: and the whole of the cellular membrane, from the bitten finger up to the shoulder, was in a state of slough. From the appearance in the beginning there could be no doubt that the sloughing process of the cellular membrane had begun immediately after the injury was received. The skin itself seemed to have mortified only because it lay over the dead cellular membrane; and what is curious, the muscles underneath were not at all affected. The poison seems to act, as far as its local operation is concerned, especially on the cellular membrane. Not only was this proved by this particular tissue sloughing so extensively, but it was also proved by this circumstance, that within an hour after the bite extravasations of blood (ecchymoses) might be traced in the cellular membrane as high as the shoulder, thence downwards on the side of the chest as low as the false ribs, presenting altogether a very singular appearance. The poison, indeed, seemed to operate on the cellular membrane neither in the direction of the nerves, nor in that of the absorbents, nor in that of the blood-vessels. In fact, it is difficult to explain the local effects produced by this virulent poison from the anatomical structure of the parts, or on any known physiological principles. I am in possession of the notes of an experiment made by the late Mr. Ewbank (who died some years ago, having been my colleague in the hospital) with this same rattlesnake. A rabbit bitten in the shoulder became affected by the poison in a few minutes, and died at the end of three-quarters of an hour. Even in this short space of time the cellular membrane, to a great extent, was in a state of slough, although the skin and the muscles were not affected. There are several other animal poisons that seem to operate in the same manner.

I have only one practical observation to make on these cases, namely, that you may prevent the extension of the mischief produced by the animal poison, by the application of a ligature round the limb above the bitten part. It seems to stop the influence of the poison upon the cellular membrane, and at the same time to prevent the poison entering into the circulation and affecting the general system: for in these cases, besides its local operation, the poison has a powerful influence on the constitution. The constitutional symptoms,



however, are not to our present purpose, and therefore I shall not describe them.

## MORTIFICATION FROM EXPOSURE TO COLD.

As parts may be killed by excessive heat, so they may be killed by excessive cold. You might suppose that cold would produce the death of a part in the following manner: that it would freeze it, and that the fluids being frozen, and to a certain extent expanded in the act of freezing, the organization of the capillary vessels would be destroyed, and death of the part ensue in the same manner as in plants and trees, which are killed by a severe frost. Two or three years ago, when there was some very mild weather, like that of spring, about Christmas, in many places the sap began to circulate in the evergreen trees. But this premature spring was followed by some days of most intense cold. The sap was suddenly frozen in the vessels of the alburnum, and as it froze it expanded, and burst the vessels, and killed the trees by destroying their organization. I said that you might suppose at first that death from cold is produced in a similar way in the animal body. I cannot say that such never is the case, but I do not find that that is the way in which it usually happens. When a part is frost-bitten it is not in general killed at once, but after being exposed to a warmer temperature, it inflames, and the inflammation immediately terminates in gangrene. I imagine that the influence of cold upon the animal body is scarcely ever so instantaneous as at once to freeze the fluid in the vessels; there is almost always time for these to contract and become emptied of their blood before the parts are frozen. You may see this in your own fingers, when they have been exposed on a cold day, they become quite shrunk and pale, as if there were no blood in them, and may remain in this state for a very long time. If in a case of frost-bite, you go to the fire to warm the affected part, there is a sudden reaction, inflammation is set up, and mortification follows. In this country we have very little experience in these cases. Every now and then, indeed, a patient is brought into the hospital who has lost a part of his foot, perhaps two or three toes, in this manner, but not until some time after the mischief was done, and we therefore do not see the process by which the death of the part has been produced. There are, however, abundant accounts of death from frost-bite, written by persons who have been in climates colder than ours. I may refer especially to a work by M. Beauprè, a French physician, who followed the Emperor Napoleon, in the Russian campaign. By his account, it would appear that parts may be under the influence of cold for a great length of time, so as to be completely deprived of sensibility, and yet, with prudent management, may recover perfectly. He states that he has frequently had his foot benumbed while riding on horseback, so that for a long time it has been devoid of sensation, and that he has got off his horse without knowing whether his feet touched the ground or not; but by rubbing them



with snow, and thus very gradually restoring them to a proper temperature, the evil consequences of frost-bite have been prevented.

#### MORTIFICATION FROM SUDDEN LOSS OF BLOOD.

As the circulation of arterial blood is necessary for the maintenance of life, so whatever for a considerable time prevents a part of the body from being supplied with blood, will produce mortification. A very copious blood-letting, for instance, will, under certain circumstances, give rise to it. I will mention a remarkable example which fell under my observation some years ago, in a case which I attended with the late Dr. Babington. The patient, a medical officer in the East India Company's service, had gone out to dinner, and drunk an immense quantity of wine, so that he got exceedingly tipsy. This was in the city. He staggered up Holborn as well as he could, and found his way into a chemist's shop. Here he was mad enough to ask the person who stood behind the counter to bleed him, and whether this person was tipsy or not also I do not know, but however that might have been, he certainly did bleed him: and not only that, but these two blockheads agreed that he could not be bled too freely; and so this drunken man lost, I believe, not less than three pints of blood. He then became exceedingly ill, was carried home in a coach, and the next day both his feet were mortified; the toes and feet up to the instep. We gave him wine and nourishment; he recovered, the sloughs separating, the dead bones coming away, and the stumps of the feet healing.

#### MORTIFICATION FROM INFLAMMATION OF ARTERIES.

Any thing which obstructs the passage of blood completely through the arteries of a limb, will, of course, produce mortification. A single ligature placed on an artery does not do it, because it stops only the main trunk at one point, and there are anastomosing vessels communicating with the artery above and below the ligature, which are sufficient to carry on the circulation. But supposing that, instead of one ligature, you were to put on half a dozen, at different distances from each other, in the space of six or seven inches of the artery you would not only render the arterial trunk, but the anastomosing branches also, incapable of carrying on the circulation, and this would produce gangrene. I imagine that such a thing never was done by a surgeon upon the human subject, but something corresponding to it may happen from disease. As long ago as when I was house-surgeon in this hospital, I went to see a poor man at Brompton, under the following circumstances. On a very hot summer's day in August, he was walking in the fields, when he felt a sense of pricking, numbness and weight, as he described it, in both lower extremities. It was with great difficulty that he crawled home. In one of the lower extremities these sensations subsided, but not so in the

other. On the following day the whole of one leg, and the thigh as high as the middle, were in a state of mortification. The mortification never extended afterwards, no vesications formed on the foot, it was not swollen, and no part became putrid except just a little in the middle of the thigh where there was a great mass of soft parts. The limb dried, the skin assuming a brownish colour, being at the same time hard and semi-transparent, so that the white tendons could be seen shining through it. It was, in fact, what has been called a case of dry gangrene. The poor fellow went on very well for four or five weeks, without any bad symptoms, during which time the separation of the dead parts in the thigh had made considerable progress. But it seemed to be more than nature could accomplish to complete the work. His powers at last began to fail, and he died at the end of six weeks from the commencement of the attack. I examined the body, and found marks of inflammation everywhere about the principal artery and vein of the limb. From the bifurcation of the iliac trunk down to the middle of the thigh, the artery was obliterated, being completely filled with coagulated lymph evidently effused from inflammation: closely adhering to the inner surface, but with some admixture of red coagulum. The vein was filled with lymph, and obliterated in the same manner as the artery. There had been inflammation of the sheath of the vessels, in consequence of which the artery and the vein adhered closely to each other and to the surrounding parts, so that the dissection was somewhat difficult. I suppose that the nature of the case is plain enough. There had been inflammation of the artery and the vein, and the obliteration of the artery was to so great an extent as to cut off the supply of blood, not only through the trunk but through the anastomosing branches. Some years ago, I was called with Sir Charles Clarke, and Mr. Bryant, of the Edgeware Road, to see a similar case, which terminated more fortunately. A lady, without any apparent reason, was seized all at once with pain in one groin, and down the anterior and inner part of the thigh, with great tenderness in the course of the femoral artery. When I saw her, which was not till some days afterwards, the whole leg below the middle was in a state of mortification. There was no œdematous swelling of the foot, and no vesication. She had still pain in the course of the femoral artery, which was aggravated by pressure; and the pulse could not be felt either in the groin or lower down. Considering the resemblance of this case to the one which I have just mentioned, I could entertain no doubt that the disease was similar, and that the mortification of the leg was the consequence of arterial inflammation. After some time the soft parts began to separate, until at last the lower part of the leg and the foot remained attached to the rest of the limb, merely by the tibia and fibula. I sawed through these bones, after which the parts gradually healed, forming a very fair stump. Perhaps you will ask why I proceeded in this manner, instead of amputating the limb at once. The fact is, that I remembered a case published in Saviard's Observations on Surgery (Saviard was a celebrated French surgeon in the early part of the eighteenth century),



which was very similar to this which I have just mentioned, and in which he amputated the thigh. In performing the operation he was surprised to find that no blood flowed from the stump, in consequence of the vessels being obliterated. The parts divided in the operation had not a sufficient supply of blood for the healing process. The stump mortified as the leg had done before, and the patient died. It appeared to me, after the evidence afforded by this case, that it was desirable to avoid an operation if possible. At the same time I ought to mention, that in the second volume of the Medical Observations and Inquiries, there is an account of a case, apparently of the same kind, in which amputation was successfully performed, the stump healing favourably.

One of the circumstances most deserving of notice in these cases is that the limb mortifies to a certain extent, and that then the mortification stops. This, however, is easily explained. We know that the obliteration of an artery must prevent the supply of blood to certain parts, but no further. Another peculiarity is, that the parts become dry, hard, horny, which condition of them has given rise to the name of dry gangrene. This is also easily explained. If mortification be the result of inflammation or of venous obstruction, there is always an effusion of serum before the parts completely die, in the form of vesication of the skin, and œdema of the cellular membrane; and then, when the parts die, being infiltrated with serum, they readily become putrid. But here the supply of blood is cut off; the blood is prevented from entering the limb, so that there can be neither vesication nor effusion of serum into the cellular membrane; and the dead parts dry readily from the absence of moisture. M. Dupuytren has described the gangrene that occurs in old age as the result of arterial inflammation, but I am quite satisfied that he is mistaken on this point. Gangrene from arterial inflammation is a comparatively rare disease, and may occur at any period of life; whereas, the gangrene of old age arises, as repeated dissections have enabled me to determine, entirely from other causes. I shall offer some observations on this kind of gangrene in the next lecture.

---

## LECTURE VIII.

### ON MORTIFICATION. (*Continued.*)

#### SENILE GANGRENE.

PERSONS advanced in life are liable to mortification of the toes and feet; generally beginning in the former, and extending to the latter. By persons advanced in life I mean those who bear upon them the marks of old age, which may, however, occur at various periods of human existence. One of the worst cases of mortification



of the toes which I ever witnessed, connected with what might truly be considered old age, occurred in a man of six-and-thirty, worn out by the operation of bad habits upon an originally bad constitution.

The question here arises, *in limine*, why is it that old persons are liable to this disease? Morbid anatomy enables us to answer this question. I have examined the bodies of a great many old persons who have died with mortification of the toes, and I have always found some morbid condition of the arteries of the affected limb. In the great majority of cases there is extensive ossification of the arteries of the thigh and leg. In many cases the arteries are not only ossified, but some of them are contracted and obliterated. Thus I have known the femoral artery to be obliterated from the origin of the *profunda* down to the ham. In other cases one or more of the arteries of the leg are obliterated, while the femoral artery is still pervious. In one case, of which I have preserved notes, the arteries were not ossified in any part of their course, but the femoral artery was converted into a gristly cord, and quite impervious from the origin of the *profunda* to the point at which it perforates the tendon of the great head of the triceps adductor muscle. In none of these cases, in which the arteries were contracted and impervious, were there any such appearances as would have indicated that the contraction had been the result of previous inflammation; and it appeared to me that the change which had taken place in their condition was best to be explained by supposing it to be the result of a process corresponding to that which produces stricture of the urethra or œsophagus.

It has been said that mortification of the toes in old persons is often the result of disease in the heart itself. This does not, however, exactly correspond with the results of my own experience. It is true, that I have known persons who had disease in the heart to die of mortification of the toes; but then there was always enough in the condition of the arteries of the limb to account for the mortification independently of the other disease. Thus in one case in which there was mortification of the right foot, the muscular structure of the heart was soft, thin, flaccid, and easily torn; one coronary artery was impervious; and the right iliac artery, for the extent of three inches, was impervious also, in consequence of it being completely filled by a mass of firmly coagulated blood. In another case, in which there had been mortification of the right foot, the muscular structure of the heart was pale and flaccid; one coronary artery was contracted and impervious; the cavities were dilated; a mass of dense coagulum, resembling that found in the sac of an aneurism, occupied the appendix of the left auricle, and there was a similar coagulum obstructing the popliteal artery and vein of the right side, and extending some way down the branches of those vessels in the leg.

You are not, however, to suppose that mortification of the toes is a necessary consequence of ossification or obliteration of the arteries, and that it occurs in all such cases. I have no doubt that many persons have the arteries thus altered in structure for many years, although mortification never supervenes. I have already explained

to you that in some cases the arteries are ossified, and at the same time either contracted or obliterated; that in others they are obliterated without being ossified, or ossified without being obliterated, even retaining their natural diameter. It is evident that the quantity of blood admitted into the limb must be different in these different cases, and that the liability to mortification must vary accordingly. But further than this: even where the arteries are rendered narrower, or actually obliterated, it seems that in general something more must happen to bring on mortification; and you will almost invariably find that the immediate cause is an attack of inflammation. Perhaps the following is not an unreasonable explanation of the phenomena which occur. The arteries are ossified, or they are partially obliterated; but still a sufficient supply of blood for ordinary purposes goes to the limb. By and by, from some cause or another, the foot becomes inflamed. I observed to you, in a former lecture, that during inflammation, an increased supply of arterial blood seems to be required, and that the arterial trunks leading to the inflamed part become dilated, so as to allow this increased quantity of blood to enter, but if the arteries are ossified, they lose the power of dilatation; they cannot expand; the greater supply of blood required in consequence of the inflammation is withheld, and so the part perishes.

You might suppose, *à priori*, that persons in the lower condition of life, who live hard by their daily labour, would be more liable to mortification of the toes than other persons; but such is not the case; at least it has fallen to my lot to see comparatively few cases of this disease in the hospital; whereas, in private practice, I have met with a great number; so that for one case under my care in the former I have had three or four in the latter. It is one of the penalties paid by those who enjoy the advantages of ease and affluence, and who live luxuriously. It is persons who eat too much, and drink too much fermented liquor, and do not take sufficient exercise, that are especially liable to this disease, and not the labouring poor.

Ossification of the arteries is a change that can take place only gradually; and the obliteration of those vessels which I mentioned as occurring in some cases, probably takes place gradually also. You will easily believe that, under those circumstances, certain premonitory symptoms may arise in the lower limb before the disease is gone so far as to produce mortification. If you cross-examine a patient who has mortification of the toes, he will generally tell you, that for three or four years preceding he has had occasional pains in the lower limbs; a sense of numbness in them; that his feet were liable to be cold; that when they again became warm, after having been cold, they have been very painful; and that he has had a sense of weakness of the muscles. Such patients walk a short distance very well, but when they walk further, the muscles seem to be unequal to the task, so that they cannot get on. The muscles are not absolutely paralyzed, but in a state approaching to it. All this is easily explained. The lower limbs require sometimes a larger, and sometimes a smaller supply of blood. When more blood is wanted, the arteries cannot



open to let it in, and hence arise both pain and numbness. In walking, the muscles ought to receive an increased supply of blood, but the arteries being ossified or obliterated, they are incapable of transmitting it; and this explains the sense of weakness. This last circumstance may be illustrated by what you observe in a particular disease of the heart. Dr. Jenner first, and Dr. Parry, of Bath, afterwards, published observations which were supposed to prove that the disease which is usually called *angina pectoris* depends on ossification of the coronary arteries. I will not say that such symptoms as those of *angina pectoris* can arise from no other cause, but I know that they do arise from it in certain instances. In two cases in which I examined the bodies of persons who died from the disease in question, I found ossification of the coronary arteries to a great extent, so that they were converted into complete bony tubes, while there was no disease of any consequence besides. When the coronary arteries are in this condition, they may be capable of admitting a moderate supply of blood to the muscular structure of the heart, and so long as the patient makes no unusual exertion, the circulation goes on well enough. When, however, the heart is excited to increased action, whether it be during a fit of passion, or in running or walking up stairs, or lifting weights, then, the ossified arteries being incapable of expanding to let in the additional quantity of blood which, under these circumstances, is required, its action stops, and there is syncope; and I say, that something like this may be observed in persons who have ossified or obstructed arteries of the legs.

These premonitory symptoms, as I have said, may exist for three or four years, until at last some accidental attack of inflammation occurs which induces the mortification. A very frequent occurrence is this: the patient cuts a corn, the knife goes below it, makes the toe bleed, and a little inflammation follows: or it may be, that the foot gets chilled by exposure to cold, and the patient goes to the fire to warm it, and that this is followed by a degree of inflammation which, if the arteries were healthy, would be chilblain and nothing more, but which, in their present condition, lays the foundation of mortification. A slight degree of inflammation of the toes almost invariably precedes the mortification; vesications then take place, the vesicles burst, and at the bottom of them you find the cutis to be dead. This may take place in one toe, or in many toes at the same time. Most frequently, the disease having commenced in one toe, extends to the others, and then to the feet. Frequently, in the beginning of the complaint, there is a most intense pain, but sometimes the pain is very trifling. The mortification having once begun, a little inflammation is kept up on its margin, which slowly creeps up the foot, and the mortification follows it; the constitution being probably little or not at all disturbed, the pulse remaining at its natural standard, and the patient in all other respects thinking himself well. The disease, in fact, generally has, in the first instance, a chronic form; but sometimes it is otherwise, so that it exhibits all the characters of an acute disease. The man to whom I before alluded as old in constitution, though not in years, being only thirty-six, had been a soldier, and



had served in Canada and in the East Indies—that is, in cold climates and in hot. He had, by his own acknowledgment, been a drunken fellow, and dissipated in other ways. Having been dismissed from the army as superannuated, he gained his livelihood by working as a labourer on the Edgware Road. Many times on going to work, he suffered from cold and numbness of the feet, followed by violent pain. One morning in September (not a very cold time of the year) these sensations took place to a very great extent; severe pain and shivering followed, and his friends took him home in a coach. Two days afterwards he was brought to the hospital, and then all the toes of one foot were mortified, and one or two of the other. Under the treatment which was employed, and which I need not explain at this moment, he recovered. The dead toes came away, the sores healed, and he left the hospital as cured. Two years afterwards he was re-admitted with an abscess on one instep, and a sinus running under the skin. This occurred the year after I had been elected assistant-surgeon to the hospital; and not knowing any better at that time, I introduced a director under the skin, and along the sinus, and, according to what I had been taught to do in a case of this kind, I slit open the sinus with a lancet, making an incision two inches in length. With my present knowledge, I should have acted otherwise. Some inflammation followed the wound, which extended to the foot. The next day mortification had extended up the whole foot to the leg, the pulse was frequent and weak, the skin hot, and the patient lay in a state of stupor. Two days afterwards he died. You will observe that in each of these attacks the disease had the acute form, and that in the second attack it terminated life in about four days. I examined the body after death, and found extensive ossification of the arteries of both limbs.

The more common history of the disease, however, is this: in its origin it has the chronic form, but if it goes on it sooner or later assumes the acute form. The mortification may gradually spread up the toes and feet without any urgent symptoms, and this may be going on for weeks, and even for months; then, all at once, a fresh attack of inflammation takes place, the mortification extends rapidly, the constitution suffers, the pulse becomes feeble and rapid, the patient falls into a state of stupor, and dies in the course of a few days.

There is no form of mortification which is more dangerous than that of which I am now speaking. A large proportion, indeed, of the patients who are so affected, under any mode of treatment, die. You will not be surprised, then, that a great many different modes of treatment have been proposed. Where there is a disease that always gets well under a certain system, medical men have little inducement to make experiments; and the wisest make none at all. But in an intractable disease like this it is natural that practitioners should be always looking out for new remedies. I do not pretend to speak of all the variety of remedies that have been used or recommended; but I shall allude to the principal ones.

In the first place, those who have observed that the disease is preceded by inflammation, have said, “bleed the patient; treat it like

an inflammatory disease." I have no doubt that some have been led to recommend this from a mistake respecting the pathology of the disease, which I noticed in the last lecture; that is, from having supposed that this peculiar kind of mortification of the toes depends on inflammation of the arteries. I have, however, explained to you that the two cases are quite different. Bleeding has, however, been proposed, and in one instance I saw it tried. The mortification was to a very small extent; there was but very little inflammation round it, and the patient seemed to have a very fair chance of recovery. But immediately after the bleeding the mortification extended rapidly up the foot, and he died. Indeed, it appears to me, that we have no right to expect that we shall cure this disease by taking away blood. There is inflammation, it is true; but if the inflammation terminates in mortification, it is because the part, on the principle which I just now explained, cannot get that additional supply of blood which an inflamed part requires. Now, if you abstract blood, and thereby lessen the quantity in the system, and weaken the action of the heart, the supply of blood to the limb must be diminished, and the cause of the disease aggravated.

An opposite plan of treatment to this has been recommended by others. They have said, "this is a disease of weakness; give bark, quinine, serpentaria, and other tonics." Now there are certain kinds of debility which will be relieved by these remedies, but here there is only a local weakness, depending on disease of the blood-vessels. Will such remedies as these mend the condition of the arteries? Certainly they will not: but they will interfere with the digestion; they will prevent so much food from being converted into nourishment as would be converted into it otherwise; they will prevent the exhibition of stimulants which really are useful, as I shall explain presently. I own that I have very little, I may almost say, no faith, derived either from theory or from practice, in the good supposed to be produced by the exhibition of what are called tonics. If you give any thing of the kind, let it be ammonia, combined with the compound infusion of orange peel. Ammonia for a little time may be useful; but I think there are objections to its long-continued use in this and in every other case. It appears to me that patients who take it for a long time, are at last rendered weaker by it, instead of stronger. It is an alkali, and produces the same effect on the blood that is produced by other alkalies. If it be taken, however, for a short time, it may be useful.

In the management of these cases there can be no doubt that one principal object to be kept in view is the maintenance of a sufficient supply of blood in the system. As the abstraction of blood is mischievous, so the opposite treatment is likely to be beneficial. Let the patient, then, be put on a system of nutritious diet, not overloading his stomach, so as to produce a red or yellow sediment in the urine, but taking as much food as can be easily assimilated, and no more. Let him live chiefly, but not entirely, on animal food, which makes blood—if I may use the expression—of a better or stronger quality than that derived from vegetables alone. In addition to this, the



patient will require the use of some such stimulants as ale, wine, or brandy. You will generally find that persons who have mortification of the toes, are such as have been accustomed to take a good deal of fermented or spirituous liquor, and being accustomed to it, that they cannot do without it. Nor is this all. Those whose mode of life has been different will require the exhibition of stimulants under these new circumstances. The question, however, will arise in each individual case, what is the proper quantity to be exhibited? Some persons may want a bottle of wine daily; but very few, on this, or on other occasions, are benefited by so large an allowance as this. In the majority of cases from half a pint to a pint daily will be sufficient. You should ascertain what have been your patient's previous habits, and then give him wine or ale cautiously, observing the effect produced. There is one good rule of conduct in this respect, both in health and in disease: wine that does not occasion heat of skin, that does not raise the pulse, nor make the mouth clammy, nor render the patient nervous or irritable, any quantity that does not produce these effects, may be given with advantage: but otherwise it does mischief.

In all cases of mortification of the toes, I have observed it to be of great consequence to attend to the state of the digestive organs. If the bowels are not in a proper state, the food cannot be properly assimilated; and the patient being confined, as he must be, to his bed, the bowels will not act without assistance. I do not advise you to give purgatives every day, but rather an active dose may be required once in three or four days; such as two or three grains of calomel at bed-time, with an aperient draught on the following morning, or blue pill with compound extract of colocynth; and all my experience leads me to believe that this is a very essential part of the treatment.

Mr. Pott was either the first who recommended, or the first who brought into general use, the exhibition of opium in cases of senile gangrene. What is the *modus operandi* of opium here I will not pretend to say; but I can have no doubt, from all the experience that I have had, that there is really no internal remedy so useful as this. I can scarcely remember meeting with a single case of recovery in an old man, from mortification of the toes, in which opium had not been exhibited. But it is with opium as with wine; a good deal of discretion is necessary as to the exhibition of it. You must not begin with very large doses of opium; they are too powerful for the constitution, and opium is mischievous if it keeps the patient dozing all the day. You may at first exhibit half a grain, three times daily, and keep him slightly under its influence, but nothing more. If he continues to take it (and sometimes this may be necessary for months together), the dose will require to be increased; but you will never be able to persevere in the use of opium, except you employ in combination with it those remedies which I last mentioned. Not only purgatives, but mercurial purgatives, are required by all persons who take opium in this manner, otherwise it stops the secretion of bile, and does mischief. The result of the case will very much depend on this—whether opium does or does not agree with the patient. If opium induces a feverish state of system, if it disturbs the sensorium,



if it interferes in any way with the digestion of the food, and especially if it makes the tongue brown and dry, it can do no good; while the mere healthy action of it will be almost certainly beneficial.

With respect to the local treatment, the first thing is to keep the patient in bed. Not feeling very ill, he probably will wish merely to lie on the sofa; but this never answers; therefore send him to bed at once. If he strives against it for the first few days, he will be driven to bed at last, and will be worse than if he had gone there in the first instance. I think a great deal of the success of the treatment will depend on his being placed in the uniform warmth of bed at the very commencement of the attack. Rest in bed, in the recumbent posture is essential. Then, what local treatment is required besides? It is common to apply poultices made of grounds of stale beer, or of red wine and oatmeal, and some recommend a solution of chloride of soda. I was accustomed formerly to rub the legs and thighs with a stimulating liniment, but I soon left off this practice, finding that it did no good; and I believe now, that, if it does any thing, it does harm. Why do the toes mortify? Because when inflamed they do not get a sufficient supply of blood. Rub the thigh and leg with a stimulating liniment, and it is the same thing, only less in degree, as blistering them: and what would be the consequence of applying blisters? It would draw the blood to another part. You want it in the foot, and you draw it elsewhere. It is something like taking blood from the arm, not indeed so mischievous: less in degree, but the same in kind. Then, I must say, that I have never seen any good from it in practice. Neither have I any reason, from what I have seen, to believe that those other applications which I have mentioned used as poultices and lotions are of any use.

Some few years ago I was in consultation with the late Mr. Vance, of Sackville Street. He had been surgeon for many years to Greenwich Hospital. Being always anxious to obtain what information I can from others, I observed to him, "You must have seen among the old men at Greenwich, a great number of cases of mortification of the toes. What have you found, on the whole, to be the best local treatment?" He answered, that he had found nothing to answer so well as wrapping up the parts in carded wool. I did not understand from him whether he wrapped up merely the foot or leg, or the whole limb; but he added that he usually left it on for many days. It struck me that this was a very reasonable kind of practice. Wool is a very bad conductor of heat, and wrapped round a limb it must keep it of very uniform temperature, and at any rate save, in a great degree, expense and trouble of generating animal heat. Soon afterwards, I had an opportunity of adopting Mr. Vance's mode of treatment. I had been poulticing a foot as usual, and the disease was going on spreading from one toe to another, and up the foot. Carded wool is so prepared that it may be drawn out in long flakes several feet in length and in these I wrapped up the foot; and then, thinking that I had better proceed further, I wrapped up the leg and the thigh also, as high as the middle of the thigh. I applied it rather loosely, one flake over another, until the limb appeared to be three or four times

more bulky than it was in its natural state. The result was excellent. The mortification never spread from the time that the wool was applied, and the patient recovered. I have employed the same local treatment since in other cases, and although, of course, it would be absurd to represent it as always successful, yet I feel bound to say that I am satisfied that it produces much better results than any which I have ever employed.

In employing the wool, recollect that you should apply it loosely and uniformly, and plenty of it. You may afterwards sew it all up in a silk handkerchief, and leave it unopened for several days, sometimes a week. You may lay a simple dressing of calamine cerate on the mortified parts, replacing it whenever you change the wool. If the mortification stops, and the slough is coming away, you may, on account of the discharge which takes place, change the wool every other day. The carded wool possesses, as a little consideration will prove to you, many advantages over the poultices. In the first place, if you use poultices the limb is exposed alternately to cold air and hot poultices three times every twenty-four hours, that is, to repeated changes of temperature. In the intervals, it is at any rate left to generate heat as usual. But if you wrap it up in carded wool, both these things are avoided. In another respect, also, this mode of treatment is a great comfort to the surgeon, the patient, and the whole family. Two or three times daily, whenever the poultices are changed, the family inquire, "Is he better? is he worse? is the mortification stopped?" You are called upon to answer these unanswerable questions, and the patient's mind is kept in a constant state of excitement. But if you put on the carded wool, and leave it there, his mind in the interval is tolerably tranquil: he lives upon the hope that when the wool is next taken off the parts will be found better; and such a state of mind is much more favourable to his recovery than the nervous anxiety which he experiences when the limb is examined more frequently. I believe that there are very few cases to which you will not find this method of treatment applicable. If there be any, it is those in which there are great inflammation and heat of skin, and in these it may be prudent to defer the application of the wool until these symptoms are abated.

Whenever the mortification is arrested, you will be made aware of it by a line of separation on the margin. The process of separation proceeds, in favourable cases, until the bones of the toes come away. You may have to cut through some dead ligaments and tendons, in order to promote the separation of the offensive and putrid parts, but you must cut through nothing else. If you apply your knife to living parts, you will certainly bring on a fresh attack of mortification. Leave the separation altogether to nature, and the natural process will do all that is required.

But there is another question. A man has mortification of the toes, and, independently of experience, you might naturally say,—here is a most dangerous disease; why not at once amputate the limb? It is probably unnecessary for me to tell you that it would be contrary to all the old rules of surgery (for which I have great



respect) to amputate a limb under such circumstances. I have never seen it done; I have never done it myself, but I have heard of cases in which the surgeon was, shall I say fool enough or ignorant enough? to venture on this summary proceeding of cutting off the leg, because the toes were beginning to mortify. In every instance the stump mortified directly, and the patient died. The chance of recovery from mortification of the toes is not very considerable—that is to say, there is a great chance of the patient dying; but still, under proper treatment, there is also a fair chance of recovery, and you ought not to risk this chance by inflicting on this diseased limb so severe a local injury as belongs to amputation.

I have told you that disease of the arteries lays the foundation of mortification; but the disease may exist many years without mortification supervening, until some accidental circumstance brings on inflammation. I have known persons with disease of the arteries, and several toes mortified in consequence of it, in whom the mortification has stopped, the sloughs have separated, the sores have healed, and who have lived for years afterwards. I know a gentleman who is now alive, and in good bodily health, at least he was so not long since, whom I attended for mortification of the toes nearly five years ago. This patient was treated on the carded wool plan, and I cannot but suspect that it did something more than relieve the disease at the time. At all events, it may be admitted as a question, whether the keeping the limb wrapped up in the carded wool, which is like keeping it in a vapour bath, may not ultimately produce some beneficial change in the condition of the diseased arteries; not, indeed, removing the phosphate of lime, which is deposited in their structure, but leading to their becoming gradually and slowly expanded, so as to allow of a more liberal supply of blood to the limb. Whether this suspicion be or be not well founded, I suppose that no one will doubt that it will be prudent in all cases to advise the patient, after his recovery, always to wear a thick fleecy hosiery stocking, or to use some other kind of warm clothing, so as to preserve the limb from the influence of the external cold.

I must add a very few words respecting the treatment during the process of separation of the dead parts. Bark, quinine, and other tonics, may be useful now, though they were not so before. Wine, and a generous diet, are still required; and some stimulating dressings, such as the unguentum elemi compositum, may be useful applications to the sores.

## LECTURE IX.

ON MORTIFICATION. (*Continued.*)

## MORTIFICATION OF THE INTEGUMENTS OF THE LEG.

THERE are cases of mortification of the integuments of the legs, which appear to correspond very nearly to those of mortification of the toes, of which I treated in the last lecture. There is, however, sufficient difference between these two classes of cases to justify me in noticing them separately. Mortification of the integuments of the legs is of more frequent occurrence than mortification of the toes. We meet with it earlier in life, and in those who have less distinct marks of old age upon them; at the same time that the chances of recovery are greater in the former than they are in the latter. Undoubtedly mortification of the leg (as well as mortification of the toes) frequently has its origin in organic disease of the vascular system. But then I find reason to believe that it takes place in many cases, independently of organic disease of any kind—as in persons who are merely lowered and exhausted by previous illness; whose heart does not act with sufficient power, because it partakes of the general debility. Such persons may and do recover perfectly, living for years afterwards, without any symptoms of organic disease showing themselves.

Let me not, however, run the risk of misleading you; as the more fortunate cases, of which I have just spoken, do not include the whole of those which you will meet with in practice. So when you are first called to a case of this kind, you must always look at it, in the first instance, with anxiety and suspicion.

A person comes to you with a vesication on the leg, and when the cuticle has given way, you find a little slough at the bottom. The slough may go on spreading, probably very slowly, perhaps with little or no suffering. By and by there is an attack of severe pain, with surrounding inflammation, and perhaps shivering. In a day or two after this, the mortification is found to be making greater progress. In bad cases the mortification spreads with frightful rapidity, with much constitutional disturbance. The pulse becomes irregular, feeble, intermittent; the tongue is dry and brown; the patient wanders in his mind, then becomes comatose, sinks, and dies. Such is the history of one of the worst cases of mortification of the skin of the leg; corresponding, you will perceive, a good deal, in the symptoms, to those of senile mortification of the toes. There is a chronic attack of the disease at first, with little constitutional disturbance; the mortification spreading slowly; the disease afterwards assuming an acute form, and in a short time terminating life. But in other more fortunate cases the mortification goes on spreading slowly, with little or



no suffering, with no great constitutional disturbance, and at last, under proper treatment stops; the slough coming away, the sore granulating and healing. As I told you before, a patient who has suffered in this manner may live for many years afterwards, and have no return of the disease.

Sometimes the disease appears in a somewhat different shape. There is a simple varicose or other ulcer of the leg: by and by the surface of the ulcer assumes a dark colour, the granulations die, the mortification extends to the skin at the margin, and spreads slowly or rapidly, according to circumstances. Perhaps the slough may come away, the sore begin to heal, and actually heal to a certain point; then mortification may begin again, and go on to a certain extent, and then stop a second time. In this way I have known the disease to linger on for a year or more, sometimes terminating well at last, and at other times terminating unfavourably.

The treatment of these cases is very similar to that of the cases which I noticed in the last lecture, and, therefore, I need not occupy your time long with this part of the subject. The patient ought to be kept in the recumbent posture in the uniform warmth of bed. This I conceive to be a most essential part of the treatment, though it may sometimes require a considerable effort of your persuasive powers to carry it into execution. Not feeling himself ill, and suffering little or no pain, he may wish to lie on a sofa, or even to walk about. I have known patients thus afflicted walk to my house to see me, and have had great difficulty in persuading them that they must go home and go to bed.

With respect to the local treatment: in the greater number of cases, I find none to answer so well as this—applying some simple dressing (calamine cerate, for example), to protect the part, and then wrap up the limb in carded wool, in the way which I explained in the last lecture. This should be left undisturbed, in the first instance, for several days; the period varying afterwards according to the quantity of discharge. There are few cases to which this treatment is not at first applicable: I allude to those in which there is a good deal of surrounding inflammation, and great heat of the limb. Under these circumstances the sufferings of the patient may be aggravated by keeping the limb wrapped up in wool. The part requires to be kept cool, and you may apply a piece of lint dipped in water, and kept constantly moist, or a simple poultice. Water dressing, however, is the simplest application, causing the least trouble to the patient, and is, at any rate, as effectual as the poultice. But when the heat and pain have in some degree subsided, then you may have recourse to the other treatment. When the slough has separated, a broad ulcer is left, seldom very deep, and often quite superficial, and for the treatment of this no specific rule can be laid down. Usually the sore does not require any very stimulating application. I have found, on the whole, the Barbadoes naphtha (if it be genuine) a better remedy for the ulcers, left after the slough has separated, than any thing else. It is a mild and soothing application, yet it has a great tendency to clean what we commonly call a foul ulcerated surface. It is applied thus:—

You dip lint in it, lay it upon the surface of the sore, place a piece of oiled silk over it, and then apply a bandage not very tight. This may be changed once, and, under certain circumstances, twice daily. If the limb be cold, and the circulation in it feeble, you may continue to apply the carded wool, or a thick fleecy hosiery stocking after the slough has separated, and in general it will be prudent for the patient to wear a warm stocking ever afterwards.

With regard to the constitutional treatment, your first attention must be directed to the state of the digestive organs. Generally in these cases the patient requires an occasional mercurial purgative, once in four or five days, or once in a week, according to circumstances. I have given bark and other tonics, ammonia, and so on; but I cannot say, that my experience leads me to place much faith in any of these remedies. I may refer you here to the observations on this subject, which I offered, when speaking of mortification of the toes. It is most essential that the patient's stomach should be able to digest food, and you should take care not to overload it with medicine if it interferes with his food; for food is much better than medicine. Wine is generally required, except just at the period, when there is much inflammation and pain in the leg: but the quantity of wine administered must depend on circumstances. Here also I may recall to your minds what I said on the use of wine in the last lecture. Opium, in these cases, is, according to my experience, very serviceable, just as it is in cases of mortification of the toes, but subject to the same restrictions as in the last-mentioned cases. If it makes the tongue dry, if it interferes with digestion, it does harm; but if it does not make the tongue dry, nor interfere with digestion, it does great good. You may exhibit it at first in moderate doses, increasing them according to circumstances; but always bear in mind, that when you have occasion to exhibit opium, mercurial purgatives will be especially required, as opium always has a tendency to stop the secretion of the liver, and nothing counteracts this ill effect of it to the same extent as mercury. When the sore has become quite clean and healthy, you may apply diachylon or soap plaster in stripes, in a circular manner round the limb, with a bandage from the toes to the knee, treating it as you would treat other sores of the leg.

#### PECULIAR SPECIES OF DRY GANGRENE OF THE SKIN.

The wax model that you see on the table, exhibits the appearances of a very peculiar sort of mortification, which is not well described, so far as I know, by surgical writers. If I recollect right, however, there is a brief notice of a case of this kind in M. Quesnay's book on gangrene—a very excellent work, published by an eminent French surgeon, about the middle of the last century.

I have extracted from one of my old note-books, the history of the first case of the kind that I met with; and I shall read it as it stands here, believing that I can adopt no better method than this for conveying to you a knowledge of this disease.



“Susan Orange, a girl fourteen years of age, was an out-patient of the hospital, under my care, so long ago as October, 1812, on account of some kind of eruption of the skin of the left arm. She appeared full grown, but had never menstruated. She had a pale, sallow complexion, with a very feeble pulse; altogether exhibiting marks of a very languid state of the system. About the end of February, 1813, the eruptions became very much relieved. (Now of this early part of her case I have only some short notes; and it is not even stated what was the exact character of the eruption. Whatever they were they did not exist to any very great extent.) Almost immediately after the eruptions in the arm had disappeared, in the beginning of March, 1813, she was seized with pain, confined to a single spot on the left forearm. The pain lasted three hours, and then subsided; but that part of the skin of the forearm, to which the pain had been referred, and which was of about the extent of a shilling, was left with a white and shriveled appearance; it was, in fact, dead, and in a short time the dried skin became hard and horny, of a straw colour, somewhat resembling a piece of parchment in appearance. As it dried, the small vessels in the skin became apparent, injected with red blood in a coagulated state. In a few days the slough separated, leaving a superficial sore, which granulated and healed under some very simple treatment. But before this sore was well closed, the patient had a second attack of pain, referred to the margin of the cicatrix, and this was followed by a second slough very similar in appearance to the first. There was, however, this peculiarity in it—that while it formed a complete zone or circle round the cicatrix, it was at some little distance from it, there being a narrow band of sound skin left between them. This second slough gradually separated, and the sore which it left healed; but before this process was completed there was a third attack of pain at the margin of the second cicatrix. A third slough formed, nearly similar to the last—that is, presenting the appearance of a zone, with an intermediate zone of sound skin between it and the last formed cicatrix. The sore left by the third slough healed like all the others. On the 9th of May, there was another attack of pain, referred to another spot on the inside of the left forearm. It lasted a day and a night, was more severe than on the former occasions, and was followed by the destruction of a piece of the skin, two inches in diameter. The slough presented the same appearances as the former ones, and came away at the end of a fortnight, being of the thickness of a crown piece. It left a sore, which healed, but slowly. About the middle of May, she began to experience a slight pain upon one instep, which continued, and on the fourth of June this pain became very intense, entirely preventing sleep on the following night. On the morning of the 5th of June the pain had subsided, but a slough was formed as large as the palm of a man’s hand, covering the greater part of the instep, which presented the same appearances, and ran the same course as those on the forearm, except that the separation of the slough, and the healing of the sore, were more tedious than had been the case in the upper extremity. After this, no fresh sloughs formed for a considerable time, though

the patient continued in the same feeble state of health. She left the hospital, and I lost sight of her until October, in the same year, when she was admitted into the physicians' ward, under Dr. Warren. She remained there for a considerable time in very weak health, with occasional formations of the same white cutaneous sloughs in different parts of the body. At last she quitted the hospital, and I lost sight of her altogether. But Mr. Hammerton, of Piccadilly, who was apothecary of the hospital at the time, informed me that she went to stay with some friends, who lived near Windsor. He has since heard that she died there, and that there was no post-mortem examination.

The model that you see on the table, was taken from a patient of Mr. Keate's, and it very accurately represents the peculiar appearance which the sloughs assumed, in the case of which I have given you the history. You see the disease in its various stages: some of the sloughs are recently formed, and in other places, they have separated, and there is a clean granulating ulcer. The only circumstance that I remember different in the case of Susan Orange, is, that there the vessels injected with red blood in a coagulated state, and ramifying through the white slough, were much more distinct than they are in this model. Mr. Keate's patient became a great deal better, and it is supposed that she ultimately recovered under the continued use of tonics. Tonics, and especially steel, were administered to the first patient, whose case I have mentioned, without any advantage.

I had a patient in the hospital who laboured under a disease very similar. This also was a woman, with irregular menstruation, who was liable to attacks of pain in the leg, which ended in the formation of thin sloughs. The only difference between this and the other cases was, that each slough was preceded by vesication. The slough itself had the appearance which I have just described. This patient improved very much under the long-continued use of small doses of sulphate of copper; but at last she left the hospital, and I lost sight of her; and, indeed, you know that it must be very difficult to get the whole history of one of these cases, or of other cases, in which the disease is protracted for a great length of time.

#### MORTIFICATION FROM THE ERGOT OF RYE.

Cases of mortification of the limbs are described as arising from the use of certain deleterious articles of food, especially from the eating of bread made with blighted rye, or rye containing ergot. It is said that people who eat bread of this unwholesome kind are liable to mortification of the extremities; and that whole families become affected with mortification under these circumstances. I have never seen any of these cases myself, and I cannot obtain from books any satisfactory information as to their pathology. I am not aware that there is any account extant of the appearances which they exhibit on dissection. I think it right to notice the subject, but as I can tell you nothing more of it than you can find in books, I shall not dwell upon it.



## MORTIFICATION OF THE EXTREMITIES FROM UNKNOWN CAUSES.

In one of the earlier volumes of the Annual Register, you will find a very curious account of a whole family becoming affected with mortification of the extremities, though it is not stated that they had been living on any deleterious articles of food. The account is given by a physician in Suffolk, of a family in that county, and nothing is stated which throws light upon the cause of the mysterious disease. The father, mother, and five children, if I remember rightly, were all affected. The lower extremities mortified in all, except the father, in whom the fingers only mortified. Mr. Solly, in the two last volumes of the Medico-Chirurgical Transactions, has given the history of a child, in whom one extremity after another, without any evident reason, mortified. The disease went on for twelve months before it terminated fatally. The limbs had all mortified, and the sloughs had separated, a sort of natural amputation having taken place. The child died, and the body was examined after death, but the examination threw little light on the pathology; and the cause of the disease is quite mysterious.

In practice, you will every now and then find other forms of mortification, which it is impossible to notice in lectures.

## ANTHRAX OR CARBUNCLE.

There is, however, one other form of this disease which I think deserves your especial consideration, and with an account of which I shall finish this division of my course of lectures. The disease to which I allude is what is commonly called anthrax or carbuncle. There is something more to be said on this subject than upon ordinary cases of inflammation terminating in gangrene, and it is for this reason that, although I have referred to it already in one of my former lectures, I shall again call your attention to it.

Persons who become affected with carbuncle, are most frequently those belonging to the affluent classes of society; and those especially who have eaten and drunk a good deal, and lived freely, and who have apparently enjoyed robust health, are liable to this disease, after they have passed the middle period of life. Dr. Prout has observed a very peculiar circumstance connected with this carbuncle, namely, that it frequently exists in combination with that form of diabetes in which there is sugar in the urine. The patient is generally in a state of ill health before the carbuncle appears; often he feels ill, though he hardly knows how to explain in what respect he is so, and then the carbuncle shows itself.

Carbuncle, in its commencement, does not always present itself just in the same manner. Sometimes there is a red cutaneous tubercle, or a pimple, which becomes exceedingly painful, resembling a boil, but which, instead of soon terminating like a boil, goes on increasing in size, becoming more and more painful, with much induration at

the base. Supposing the disease to be left to run its course, it will proceed thus:—the induration goes on increasing in degree as well as in extent, the skin becoming hard and brawny, and of a dark crimson colour, especially at the centre of the induration. I have known the induration at last to occupy a space not less in size than that of a soup-plate. The patient all this time suffers exceedingly from a burning pain, with a sense of weight, constriction, and stiffness. His health is otherwise deranged; his pulse is frequent; his tongue furred; sometimes he is sick, and perhaps he nauseates his food. In cases that terminate ill, you will find, after a certain time, when the induration is very extensive, the pulse becoming weak, irregular, and intermittent; there are great prostration of strength, hurried manner, delirium, coma, and this last symptom precedes death. But the disease may terminate more favourably, even without the aid of surgery. The central part of the hardness becomes softer; you can feel an imperfect fluctuation under the fingers; the skin ulcerates in one small point, then in another, till you find it perforated in a great number of points, and a white slough is seen through the perforations. By and by the intermediate portions of the skin between these points perish, and a slough of the skin comes away. There is a discharge of a small quantity of thin matter, and a large slough of the cellular membrane is seen underneath. Some time afterwards the slough comes away, consisting partly of dead cellular membrane, partly of lymph, and partly of pus, which is infiltrated into it. Then the exposed surface granulates and heals.

But in other cases the disease, in its origin, is somewhat different, showing itself not in the skin, but in the subcutaneous texture. There is a hard lump in the cellular membrane under the skin, which is excessively painful; this goes on increasing till it adheres to the skin, then the skin becomes discoloured, and the disease runs the same course as in other cases, in which it begun with a red pimple.

The disease occurs in men more frequently than in women, perhaps because they live on the whole more intemperately. It occurs more frequently on the back, between the shoulders, than anywhere else; sometimes on the back of the neck, and sometimes on the occiput. I have observed that when it is on the back of the neck, and especially when it is on the occiput, the disease is very dangerous; but by far the greater number of patients recover in whom the disease is situated elsewhere, and in whom a proper treatment is adopted. The disease is not very common on other parts of the body; I have, however, known it to occur on the uates and thighs, and once upon the face. I was sent for to see a gentleman who I was told was very ill, and when I visited him, I could not at first conceive what complaint he had. I never saw such a man's face before. It took me some time to understand what it was. There was a carbuncle on the nose, and you may conceive, better than I can describe, the strange appearance of the human face under such circumstances.

This disease, I have said, occurs in those who have lived very freely, and, like most diseases to which such persons are liable, requires to be treated not by lowering the patient, but by giving him



nourishment and wine—nourishment, as far as his stomach can digest it; wine, as far as he can take it without being heated, and rendered feverish and irritable. When there is excessive pain, you must administer opium. It is better, generally, when the patient is suffering a great deal of pain, to give a good dose of opium at night; but, if possible, to avoid giving it in the day time. There is always a great objection to the exhibition of opium, as it will interfere with digestion and confine the bowels; but there is a still greater objection to the want of sleep, and you must give it as the least of two evils. If you administer medicines besides, bark, quinine, and other tonics, may be given. But I do not think that in general, during the active state of the disease at least, you will find much good from any thing but nourishment, wine and opium, with an occasional purgative. The purging, however, should not be carried to an excess. Moderate purgatives, administered at intervals, may be useful, and indeed necessary; but a repetition of drastic purgatives will be injurious.

But the principal remedy in these cases belongs to the local treatment. I described to you the disease, supposing it to be left to run its course, and it is always desirable to know what a disease will be if you let it alone; but I do not advise you to let this alone, nevertheless. Until there is an opening in the skin, until the pus begins to escape, and the slough is exposed, the brawny hardness of the skin continues to spread. The slough and matter require an exit, and you must give them an exit by making a free crucial incision through the carbuncle. Make, not a small partial incision in the middle, but one which extends completely through the whole brawny tumour, from one side to the other, and then another at right angles to the first, also completely through the tumour and to the bottom of it. If this be done effectually, and not too early, you will generally find that the progress of the induration is stopped. If it should, however, continue to extend, you must follow it with an incision on another day. Where this incision is made at the proper period, it is generally effectual; and with good medical treatment the patient recovers. In making the incision, you will find that you divide a thick slough of the cellular membrane, and it has a peculiar appearance, as I have already explained, in consequence of its being infiltrated with lymph and pus, so that when it comes away, it is more than the mere destruction of the living parts will account for. After you have made the incisions, you may apply a poultice to the part, and change it three or four times a day. It is not uncommon to apply some digestive ointment, such as used to be called *basilicon*, or the *unguentum elemi compositum*; it being supposed that this favours the separation of the slough. I do not know whether such applications have this effect or not; perhaps they may: at any rate they can do no harm. When the sloughs are separated, the patient's system will be relieved; but he will require support both from food and medicine. If they were not useful before, he will now derive benefit from tonics, especially from bark. Although I much doubt the efficacy of tonic medicines in the early stage of the disease, I have no doubt they are very

efficient and very useful at this period, when the sloughs have separated.

M. Dupuytren says, that there are elongations of the subcutaneous cellular membrane which extend into the skin, and that when one of these becomes inflamed, it forms a boil, but if several be inflamed, they form a carbuncle. It may be so: the disease may begin in these elongations of the cellular membrane of which he speaks, as far as I know; I cannot contradict this opinion. But there is something more than this: I do not believe a carbuncle to be a mere local affection; it is a constitutional disease, and is always preceded by something wrong in the general health. It seems to me as if there were something like a poison in the circulation, which is thrown out of it into the cellular membrane in cases of carbuncle; so that we might be justified in classing this disease with small-pox and other exanthemata. In a case of small-pox, there is first an attack of fever, which is relieved as soon as the pustules appear; and as these contain the variolous poison, there is little reason to doubt that it is the expulsion of the poison from the circulation that relieves the fever. The case which I am about to relate seems to indicate that something like this happens in cases of carbuncle. A gentleman, and old acquaintance of mine, formerly a surgeon of eminence in a provincial town, but who has retired from his profession, about sixty-three or sixty-four years of age, called upon me some years ago, at my own house, in the morning, and said there was some complaint in his back, and that he suffered a great deal of pain. On examination I found that there was a carbuncle. I sent him home, and told him to poultice it. Two or three days afterwards, it being, as I supposed, in a proper state for the operation, I made a crucial incision through it. He was very much relieved, and was going on very well, indeed, when there appeared another carbuncle, but on a smaller scale than the first. It was not a pimple in the skin, but the subcutaneous form of the disease which I have already mentioned. I told him what I believed to be the case. He said that it did not give him a great deal of pain, and I therefore thought it would be better to let it advance a little further before I opened it. It went on increasing, the skin over it became purple, and the whole assuming the ordinary form of carbuncle. In the mean time he continued well, and appeared to have hardly any thing the matter with him except the local complaint. But two or three days afterwards on calling upon him, I found him in bed. On inquiring the cause, he said in a faint voice, "O! my dear friend, I am dying." I expressed a hope that that was not the case. "O! yes," said he, "I am dying." I found that indeed his words were true. His skin was cold and clammy, and the pulse scarcely perceptible. I asked him how long he had been in that state? His answer was, "During the night all the pain subsided, and at the same time I became ill. I believe that the carbuncle itself has disappeared." And so it was: when I examined the back, I could find scarcely a vestige of it. He died in less than twenty-four hours after this change had taken place.

Another circumstance is worthy of notice, as confirming the view



which I have taken of the pathology of this disease. It frequently happens, when a patient has recovered from a large carbuncle, that other smaller ones, like boils, appear on different parts of his body; and a succession of these, gradually becoming smaller and smaller, may continue for many months, or even for one or two years.

---

## LECTURE X.

### INFLAMMATION OF THE VEINS.

INFLAMMATION of the veins is a very common disease, and was not much noticed till within the last forty or fifty years; but of late it has been the subject of very general investigation. One description will not apply to all cases, as it occurs under various circumstances, arises from various causes, is attended by different symptoms, leads to different results, requires, of course, different treatment, and has the additional characteristic of sometimes being not at all dangerous, and at other times extremely so. Let us, then, take the disease in its simplest form, for all diseases should be thus studied. I address this observation more particularly to those gentlemen who are just commencing their studies; I recommend them to study the simpler forms of disease first, namely: those cases which more advanced students look upon as of trifling importance, for, by thoroughly understanding these, you will be enabled more readily to comprehend those more difficult cases which you will meet with afterwards. Suppose, then, a man has varicose veins of the leg; he takes too much exercise; you therefore rest him; you also purge him, and bathe the parts with cold lotions. The pain probably soon ceases, and very slight constitutional disturbance results. Now, if from any cause this man should die, and an opportunity occurs for examining the body, you will find the veins which, during life, felt hard and like cords beneath the finger, filled with lymph, so as entirely to have obliterated their cavities. This form of the disease is not dangerous; it seldom leads to any bad result. Then there are cases where inflammation of a larger vein takes place, independently of wounds or mechanical injury, and these also are not generally dangerous. Let us suppose an ordinary case. A man takes too much exercise, or is exposed to cold; he gets a sense of weight and pain in the groin, extending down throughout the whole of the limb; there is tenderness along the course of the veins during the day; no constitutional disturbance; pulse a little quickened, but the symptoms not urgent; then, after a time, the calf of the leg swells, soon the whole of the leg swells—it is an elastic swelling, and is sometimes sufficient to make the leg double its natural size. These symptoms continue for a length of time, and then, either with or without treatment, begin to subside; and first, perhaps, the pain ceases, the swelling remaining; then, perhaps, the size diminishes,

but not to the natural proportions, and sometimes the leg and ankle remain subject to swelling the remainder of the patient's life. Sometimes the swelling subsides every morning, but returns in the afternoon; here, again, there will be pain in the limb and tenderness in the course of the veins. In this case you will feel the vena saphena and the femoral vein like a cord in the groin, and you will be sure that this is the result of inflammation; but it will not be acute, and generally not attended with danger; but if it becomes more acute, and goes on to suppuration, then it is dangerous; and a particular feature of these last cases is the swelling of the thigh, leg, and foot. You may perhaps ask, why does venous inflammation produce this swelling? The reason is plain. The cavity of the vein becomes filled with lymph the blood cannot pass back to the heart, and then, having to find its way by some circuitous route, it becomes collected in the veins below, and the serous portion escapes, I suppose, by lateral apertures in the capillary vessels, and in this way produces the œdematous swelling. It is in this way effusion takes place in dropsy; it may be the consequence of disease of the heart, that the blood cannot make its way through the vena cava, and so you get the effusion in the same way. Another man, we will suppose, has disease of the liver; the blood gets confined in the vena portæ, and the serum escapes into the abdomen, thus laying the foundation of dropsy of the belly; if effused into the chest, it constitutes the disease called hydrothorax. Now to return; if you examine a case after death, resulting from acute inflammation of the veins, you will find the veins filled with coagulated blood mixed with lymph, and I am disposed to believe that, when the coats of the veins become inflamed, they give the blood contained in them a tendency to coagulate. It is not the disposition of blood when effused to coagulate; for we know that it may be effused into the tunica vaginalis, and remain there a long time without its being coagulated. You have another familiar example of this in the leech, in which the blood does not coagulate; but when it is out of the body, stir it as you will, it will coagulate. When inflammation of the veins runs very high, it becomes a dangerous complaint. It was the practice of Sir Everard Home to put a ligature on the vena saphena in these cases, but its effect was the production of increased inflammation. Mr. Abernethy recommended cutting the vein in two, and I being at that time much less experienced than I may claim to be now, tried his plan, but to my dismay, in a few days the man was dead, with violent inflammation of the veins. The example, therefore, is not one to be followed.

I shall now describe to you some of the MORBID APPEARANCES. These are different according to the period at which the patient dies; sometimes you find a red blush on the inner surface of the vein, and nothing more, this perhaps extending upwards towards the heart, and also downwards towards the capillaries, sometimes even to a greater extent in the latter direction than towards the heart; I do not by this mean that it runs a greater distance, but that it runs along a greater number of branches, because when it ascends, it confines itself to the trunk, and does not enter the branches. In these cases it looks like a



red stain, with a very little lymph effused on its surface; and with nothing more than this I have known the patient to die in a few days. But if he does not die, other changes take place. You find the blood coagulating in the veins (I say coagulating, for there is fibrin mixed with colouring matter), but this coagulum is evidently mixed with blood which has been effused, and sometimes you find a portion broken down, dissolved, and looking like pus, although I have not satisfied myself that this is pure pus. I have seen coagulum in the two ventricles mixed with this liquid-like pus, but it will not stand the test of a close examination, although it resembles the pus found in an aneurismal sac. If, however, the disease is allowed to go on, pure pus is formed, but then the vein becomes totally obliterated below, and the "vis a tergo" is wanting. In the greater number of cases where lymph is effused into the cavity of a vein, you will find pus secreted on the side nearest the heart; and although the pus at first puts on a doubtful appearance, if it goes on, there will be actual, pure, genuine pus, unmixed with any thing else; and then another portion of coagulable lymph will be effused between the pus and the heart, thus forming a complete barrier to its further progress. This second layer of lymph, however, is not unfrequently wanting; but even then, it does not follow that the pus shall mount up to the heart; for you will remember there is an obstruction also formed by the effusion of lymph previous to the formation of pus; so that the "vis a tergo" to force it forwards is wanting, and in this case it will form a regular abscess in the vein. The vein may be filled with pus for two or three inches of its length, or pus and lymph, pus and coagulum, or all three mixed together. If this remain, you have suppuration taking place, and then you get, secondly, abscess round the vein, which is entirely destroyed; so that, if the patient dies, you find merely very indistinct remains of it on examination. This abscess will soon make its way under the skin, and present itself externally. These, then, are the principal morbid appearances which present themselves after the inflammation of a vein. There are some others of minor importance, but these I shall dismiss for the present.

I come now to speak of the SYMPTOMS OF VENOUS INFLAMMATION. Now, let us suppose there has been a wound in the vena saphena, or in the groin; the patient has violent headache; shivering, the pulse very quick; tongue dry; next day the pulse so rapid that you cannot count it; another attack of shivering and intense headache; great agitation of manner, and an expression of anxiety in the countenance; the tongue will get black, as if he were in the last stage of typhus, and probably the next day the patient will die. This is not an overdrawn picture, for I have known several cases run this rapid course. But you will also find tenderness above and below the wound, the skin being so tender that the patient cannot bear it to be touched, and yet the pain will be relieved by putting on a flannel bandage, because it prevents the inflamed veins becoming distended. If the symptoms are less urgent, there will be shivering; an anxious countenance; brown tongue; sallow appearance of the skin; disturbance of the mind, but to a less degree than in the former; and in

these cases, where the symptoms are not so urgent, although the disease may go on for a long time, nevertheless the patient will ultimately recover. In these cases, where the disease persists for a long period, the local changes which I mentioned become manifest, viz., redness in the course of the vein; discharge of pus from the part where the ligature was applied; hardness of the vein, and swelling over the part which has been injured; and the abscess forms and breaks, and you will be able to press out the fluid from it even for several inches. If the disease has occurred after bleeding from the arm, several abscesses may form a few inches distant from each other, reaching up as high as the shoulder. But even cases which have gone on to the formation of these secondary abscesses may recover. The abscesses may be laid open; they will then go on secreting purulent matter for a long time, but ultimately granulations will form on the surface, and the patient will be restored. If this were all, there would be no reason why the majority of cases should not recover; but I have not yet described the principal thing which prevents this fortunate consummation. The patient goes on suffering the train of symptoms I mentioned before, viz., shivering, headache, &c., which appears to be connected with venous inflammation in the first instance; but as the abscesses come forward, or as the inflammation subsides, the constitution does not recover, but appears to suffer more. As the local symptoms subside, you might expect the constitution to recover itself; but instead, you find the febrile excitement continuing, with an anxious countenance, sallow tinge of the skin, fresh attacks of shivering, and pains in other parts of the body. One will complain of pain in the opposite shoulder, another in the knee, whilst a third will have a short cough or pain in the liver. In fact, there will be a variety of symptoms present in various parts of the body; and if the patient dies, you will find that actual disease has taken place in them. In one patient you will find both knee-joints filled with a reddish fluid; another will have a deposition of cheesy matter in the liver, which goes on to abscess; a third will have it occurring in the lungs, whether beginning in the air-cells or not, I know not; and these go on to abscess. You will also find effusion of fluid into the ventricles of the brain; effusion of lymph sometimes into the pericardium; inflammation of the pleura, and effusion here also. It is said the inflammation has been traced to the vena cava, but I do not think this observation correct. Mr. Hunter threw out the hint as if it were a possibility, and later writers have mentioned it as a matter of fact. Then you have fluids deposited in various parts of the body, and you may have fluid, and even lymph without pus. Venous inflammation may be the consequence not merely of a ligature or wound affecting a venous trunk, but it may arise in this way. A man has erysipelas, which is a disease of the integuments. This may extend into the cellular membrane, producing sloughs there, and abscesses under the skin, and so you have abscesses and sloughs mixed together. Now, in this case, when the patient dies, you will find the veins have participated in the erysipelatous disease. A man comes into the hospital (a gin drinker) with a wound in the leg, and



he has inflammation of the cellular membranes. The man dies, and when you examine him, you find pus deposited in the cellular membrane. Here again you have the disease of the veins. Inflammation of the veins also not unfrequently takes place after child-birth. Inflammation of the veins of the uterus, extending into the hypogastric, internal iliac, and cava veins, sometimes occurs in these cases. Here, also, if the patient dies, you find the veins filled with pus, and there is swelling of the lower limbs. In this way we account for "phlegmasia dolens," the white swollen leg. It is supposed that this swelling, which takes place after child-birth, is the result of venous inflammation; but if it is, it must be said that venous inflammation does not usually assume the violent character we have just described, but generally that milder form which I mentioned first; but very few of these cases occur where death follows. Indeed, Sir Charles Clark told me he never saw a case which terminated fatally.

---

## LECTURE XI.

### INFLAMMATION OF THE VEINS. (*Continued.*)

At our last meeting I began the subject of venous inflammation, and if I recollect rightly I explained some of the more remarkable circumstances which occur towards the termination of the disease—I allude to the inflammation showing itself in different parts of the body. Now by this I mean not merely those parts which are in the line of the inflamed vein, but in parts quite distinct from, and having no connection with the original seat of the disease. Thus, a man may have inflammation of the arm, and presently he will be attacked with inflammation of both knees, and the cartilages will be entirely absorbed; or again, abscesses may form in any other part of the body. An interesting pathological question is, "where there is venous inflammation, why should there be these deposits of pus in different parts of the body?" It is the opinion of some persons that pus deposited in an inflamed vein is carried into the general circulation. M. Cruveilhier has made some experiments on this subject which seem to prove that pus may be formed in an inflamed vein without being absorbed. Mr. Arnott says that although pus may not be produced in the vein, still there is a diseased action going on, by which a secretion analogous to pus is formed which becomes mixed up with the blood. But neither of these declarations can be considered as established, and I do not think it is at all necessary that there should be a morbid secretion of pus to produce these symptoms. A man has an attack of fever without your supposing that there is an affection of any particular organ or region of the body, yet what is the result? In one man you will find ulceration taking place in the jejunum or ileum; in another there will be a determination of blood to the head,

or he will have an attack of inflammation of the brain or lungs, and these results would lead us to suppose that where the system has been subjected to febrile action for a length of time, it acquires a disposition to produce local inflammation. A gentleman had a stricture many years, and several ineffectual attempts had been made to pass a catheter into his bladder; I however at last succeeded, but having drawn off his water he was immediately seized with a violent shivering, and after this had an attack of inflammation of the neck, and since that time the head has been permanently fixed and immobile. Now this you see arose merely from passing a catheter, and of course no part of it could have been absorbed. Again, a lady of nervous temperament had spasmodic contraction of the sphincter muscle, attended with great pain whenever she went to the closet; well, I divided the muscle on both sides, and she immediately fell into a state of complete syncope, from which, after a time, she recovered, but only to relapse into the same state a second time, and this entirely from the influence produced upon the nervous system. These attacks continued for some time till ultimately she was seized with inflammation of the chest, from which she died. On then examining the body I first looked to the part where the operation had been performed; in the hemorrhoidal veins nothing was to be seen; but I found inflammation of the peritoneum, and also effusion of lymph in the cavity of the chest; now in this case there was inflammation set up in a distant part of the body which could not be from the absorption of any diseased matter; in short it was produced entirely from the effect upon the nervous system. After injuries of the head we find these deposits in various parts of the body, and they occur more especially when there is suppuration going on between the dura mater and bone. One person will die of abscesses in the lungs, or of inflammation of the pleura, accompanied with effusion into the cavity of the chest. Then I have known cases where there has been fracture of the humerus or clavicle, and when the patient has died, the end of the bone has been found bathed in pus, and in these cases matter has been found between the dura mater and the bones. Some persons would have said, perhaps, there was in this case inflammation of the veins, which you have overlooked, and purulent matter has got into the circulation, but this is not at all probable; because it is not pus always which is effused, sometimes it is merely serum, and sometimes again you will have this secondary deposition of matter set up where there is no suppurative inflammation at all. A man had an injury of the head, and the surgeon applied a caustic issue which produced a large slough, so that the bone was exposed; in a short time the man died: previous to his death, however, he had a set of curious symptoms, for which we could not account: such as swelling of the abdomen, and a puffiness about the body; and when examined after death, we found there had been considerable peritoneal inflammation. The head was also examined, and it was found that where the caustic had been applied, the bone was dead, and of course, the dura mater separated from it, and a little pus was found between them. 2dly. A girl suffering from pain in the head, had a



caustic issue applied; she died of inflammation of the lungs, and it was found that where the caustic had been applied, the bone was dead; there was slight sloughing of the part and effusion into the brain. 3dly. A man was admitted into this hospital, who had been beaten about the head with sticks; he remained here till he died, and on examination, it was found that small particles of pus were deposited between the bone and dura mater; there was also a gelatinous matter mixed with these particles. Now, to say there was inflammation of the veins in all these cases, would be absurd. The view I am inclined to take of these cases is, that there is a certain disturbed state of the constitution induced, which has a tendency to end in the formation of pus; for you see that in persons who die from symptoms analogous to those we have just enumerated, there are always to be found in the extremities, what are called critical abscesses, depositions of pus in the cellular membrane. A gentleman had a violent cold, and was attacked with inflammation of the vena saphena, and died. The result here was rapid, and shows the importance of careful attention to the local disease, though still, as I said before, as a general rule, and in the majority of cases, this disease is not dangerous. The treatment must depend upon circumstances. But suppose you were called to a patient with symptoms, such as we mentioned in our last lecture, (shivering, sallowness of complexion, brown tongue, and slight derangement of the mental functions,) you would apply leeches in the course of the vein; retain the limb in the recumbent posture; keep the bowels open, and give moderate diet. But the principal remedy is mercury, in moderate doses, continued at stated intervals till the gums are slightly affected. Calomel gr. ij, or hydrargyri bichloridi gr.  $\frac{1}{2}$ , bis in die, is, I think, the best mode of administering the remedy. Where there is much inflammation of the leg, and considerable swelling, you may relieve the patient considerably by puncturing the part with a common needle; the fluid will escape rapidly from the cellular membrane. Mind, I do not say this will cure the disease, but it will relieve it considerably. I am seeing a gentleman now who had, some years ago, an attack of venous inflammation, and the leg was so much swollen as to threaten the bursting of the skin. In this case I punctured it in the manner just described, and afterwards he did it himself, and always found considerable relief from it. This mode, of course, gives greatest relief when the serum is very thin; sometimes it will be a comfort to the patient to wear a bandage as a support to the parts, but it should be *flannel*, and never applied *tightly* with the view of preventing the swelling. Once I saw a lady who had that form of swelled leg called phlegmasia dolens, the swelling being very large, and the skin tense; a bandage was applied, but she was soon attacked with pain in the hypogastrium, and a variety of symptoms which I cannot describe; the bandage was taken off; immediately the swelling returned, but the pain in the abdomen, and all the other symptoms just alluded to, disappeared; and this occurred twice successively. In acute venous inflammation, it is generally a good practice to take blood, but this cannot be done in all cases. Sir E. Home tied the

vena saphena in three cases, but they all died except one, who being a very strong man, was bled very freely, and here the practice succeeded beautifully, and the venous inflammation almost entirely subsided. But sometimes this disease is attended with low symptoms, the pulse being weak and feeble, and there is great prostration of strength. In such a case as this, it is evident you could not take blood largely; you must, therefore, be content to apply leeches to the part. Warm fomentations seem to answer better than cold applications; but this may be regulated by the feelings of the patient. Occasional purging and low diet will, of course, be most proper. Very frequently this is a consecutive disease, as it may follow an attack of erysipelas. Of course, in this case, and when it comes after cellular inflammation, the patient will not bear depletion. It is a question with some whether or not mercury is beneficial in these cases. In those which I mentioned of Sir E. Home's, which occurred when I was house surgeon to this hospital, it would doubtless have been extremely beneficial, but the administration of the remedy at that time was not thought of. In those cases where there is great prostration of strength, I doubt the propriety of its use; but where this symptom is absent, it may be employed with advantage. It, however, requires a good deal of discrimination on the part of the surgeon to determine when it is, and when it is not right to put the patient under the influence of mercury.

You will find, gentlemen, after venous inflammation, the limb is generally left swollen, and the veins are what is termed "varicose." Can any thing be done here? will a baudage do good in these cases? To a certain extent it will; but let your patient walk about, and you will find that the collateral vessels will thus become dilated so as to make up for those which have been obliterated. In some cases the swelling will entirely disappear, whilst in others, it will remain, to a certain extent, the remainder of the patient's life. I spoke of the disease in connection with varicose veins as though it only occurred in the lower extremities, but I saw it in the forearm of a patient a very short time ago, produced, as I think, by bleeding. In cases where a secondary deposition of pus takes place, very few, I think, recover, as the deposition is scarcely ever confined to one part of the body; and if you let it out in one part, there is no method of preventing its recurrence in another.

When venous inflammation has gone on some time, it is quite beyond the reach of art. But you should always bear in mind the original cause of the disease, and also the patient's previous mode of life. Many of you will recollect the case of the man last year, in whom I tied the external iliac artery; after the operation, there was a quick, irritable pulse, with pain in the opposite shoulder; and these I attributed to the man being debarred his usual quantity of stimulus. After bleeding him once, and finding he was no better, I allowed him a quantity of gin daily, and if I had not done so, I think there would have been the secondary formation of matter, as in some other cases I have described. Those persons who drink large quantities of spirits, are most liable to this deposition of matter, and, I think, it is owing,



in a great measure, to their being deprived of their usual stimulus; and in these cases you will sometimes succeed in arresting the disease by allowing the patient a certain portion of that kind of stimulus to which he has been accustomed. The general rule for treating inflammations, is by depleting remedies;—but there is another plan. Suppose a man gets a piece of glass in his arm, you would of course, in the first instance, remove it if you could, just as in chancre you give mercury to remove the cause which produced it. On the very same principle, in those cases where you have low symptoms coming on in cases of venous inflammation, produced by the withdrawal of the usual quantity of stimulus, your first plan should be to restore to the patient at least a portion of that stimulus. Let me take this opportunity of observing, that mischief is not unfrequently produced by violent changes in the patient's diet. If a man who has been accustomed to drink gin, or other stimulus in large quantities, meets with an accident, and you take him off that stimulus, you will have the injury going to a much greater extent than it would if you had not done so. And I am certain that I have been more successful in the treatment of persons who have been accustomed to drinking or high-living, by merely diminishing their quantity, than when I have had recourse to antiphlogistic treatment.

---

## LECTURE XII.

### VARICOSE VEINS AND ULCERS OF THE LEGS.

By a varicose vein, I mean a vein which is unnaturally dilated. When there is increased growth of any part, the arteries increase in size to take the blood to it, and the veins increase in size to take the blood from it. This is a healthy increase of the veins, and we do not call these veins varicose. But by a varicose vein, I mean a vein unnaturally enlarged, without the dilatation being instituted to answer any good purpose in the animal economy.

Varicose veins occur principally in three situations: in the legs; in the spermatic cord, where the disease is called *varicocele*, or *circosocle*; in the rectum, and about the anus, where the disease takes the name of *piles*, or *hæmorrhoids*. I will explain to you, by-and-by, why they occur in some situations more than in others. But varicose veins occasionally occur in other parts of the body. I have seen varicose veins of the forearm to a considerable extent. In the case to which I allude, there had been inflammation of the medium cephalic and cephalic vein. These veins had become obliterated, and, in consequence of their obliteration, the blood did not easily return from the forearm; so that the veins became varicose.

A man was admitted into the hospital who had varicose veins all down the right arm, and to a considerable extent down the right side

of the chest. He had difficulty of breathing, and cough. One day he felt as if he had received a blow on one side of the chest, and immediately a large abscess presented itself, as big as an orange externally, which had evidently made its way from the inside of the chest through one of the intercostal spaces. Immediately upon the appearance of this swelling, the varicose veins in a great measure subsided. The man died, and on examining the body after death, it was found that there was disease in the bronchial glands; suppuration had taken place in them, and a large abscess had been confined in the inside of the chest, which pressed on the right subclavian vein, and this caused the blood to stagnate in the veins in which it had its origin, and which had in consequence become varicose. So under corresponding circumstances, you may find the veins become varicose in any part of the body.

In the first of the cases which I have mentioned, the varicose disease was the consequence of disease and obliteration of the venous trunks; and such is sometimes the cause of varicose veins in the legs. There was a man in the hospital with very bad varicose veins of the legs, one of the worst cases of the kind that I ever met with. The man, however, was admitted into the hospital on account of another disease, of which he died. I examined the body after death, and found an obliteration of the external iliac vein. This vein had been inflamed at some former period, and had become converted into a thick hard cord. The blood could not flow to the heart through this great venous trunk, and so the branches below became varicose. In the other case which I have mentioned, pressure on the venous trunk was the cause of the varicose disease. And so pressure on a venous trunk in the abdomen may produce varicose disease in the legs. You have a very frequent example of this in child-bearing women. The pressure of the gravid uterus will produce varicose veins of the leg. The woman is brought to bed, the pressure is taken off, and the varicose veins in a great measure disappear. Then she becomes pregnant again; the varicose veins recur; she brings forth another child, and the veins in a great measure subside, but not so completely as before. Every time she is pregnant the varicose disease of the veins becomes aggravated, till at last it exists to a great extent in both legs.

There are few cases in which we may trace varicose veins of the lower extremity to pressure or obliteration of the venous trunks; but in the majority of cases it must be acknowledged that we cannot trace the disease to these sources. It appears, in these cases, to be a mere weakness in the coats of the veins, rendering them incapable of supporting the weight of the body. There is, of course, always a column of blood pressing downwards when the patient stands erect; and if the coats of the veins are weak, this is sufficient to render them varicose. You will understand, then, why, when the coats of the veins are weak, persons of particular habits, or of a particular physical construction, are more liable to varicose veins of the legs than others. A person who is always upon his legs, always standing or walking, is much more liable to have varicose veins of



the legs than one who leads a more sedentary life, because there is here a column of blood almost always pressing on the veins below.

Sir Everard Home has observed, that in the army the grenadier companies are especially subject to varicose veins, they being taller men than the other soldiers. Cooks are very subject to varicose veins. Why? If you put one hand into warm water, and the other into cold, you know that the veins of the former will become dilated, and that those of the latter will contract.

But where the disposition to the disease exists, do all the veins become dilated? By no means. The deep-seated veins never become varicose, because there is the pressure of the muscles upon them on every side, which prevents their dilatation. It is only the superficial veins that become varicose. The branches of the vena saphena major, and sometimes of the vena saphena posterior, become dilated. But the valves do not increase with the dilatation of the vein; they remain of their original size; and what must be the consequence? Why, the valves do not protect the venous branches below from the pressure of the column of blood above; they do not answer the purpose of valves any longer; and the want of action in the valves tends, of course, to aggravate the disease. By and by the valves seem to become changed in structure; they shrivel up, and become at last good for nothing, not even looking like valves. This is in conformity with a general law of the animal economy: a part not used wastes. If you were to tie up one eye, and cover it from the light for many years, you would find at last that you could not see with it. Muscles not used will waste. So it is with the testicles and other organs. When valves become useless, nature does not seem to think them worth keeping, and they waste or shrivel.

In a few instances varicose dilatation of the veins comes on rather suddenly: I have known cases in which the veins in both legs became varicose immediately after very hard walking. But, in general, the disease comes on slowly, and increases gradually. At first one or two veins are a little dilated, and you see the dark blood looking of a blue colour through the skin. Then other veins assume the same appearance, and by and by you find clusters of varicose veins in different parts of the leg. The skin is elevated by the clusters underneath; and it is when the skin is strained and rendered thin that you see the dark colour of the blood through it. These clusters are more frequently situated about the inner ankle, and the inner side of the leg, than anywhere else; but they may occur anywhere else, at the back or outside of the limb. Then, as the disease proceeds, it extends to the trunk of the vena saphena major, and this becomes dilated all the way up to the groin. Sometimes the saphena major looks as large as your finger, assuming a knotted appearance. What is the explanation of this? It would seem that the vein is tortuous. Varicose veins are not only increased in diameter, but in length, and of course must then be made tortuous; and where the saphena vein is twisted, as it were, upon itself, it assumes the appearance which I have mentioned. The dilatation of the vein is perceptible when the patient stands erect; but when he lies down, the

varicose appearance vanishes, because then the veins become emptied of their blood.

While these changes take place in the condition of the veins, the patient experiences more or less inconvenience. Sometimes he suffers from a sense of itching and weight about the inner ankle. The sense of weight and fullness becomes more troublesome when he takes a long walk, so as to be very distressing. When there is a varicose cluster, the patient in a few instances experiences extraordinary pain, and this, as I imagine, arises from there being some nervous filament pressed on by the tumour. Sometimes the patient complains of being subject to cramp in the muscles of the leg, especially after a long walk. Varicose clusters occasionally burst and bleed. I said, in the commencement of the lecture, that the disease is not dangerous, but that is not absolutely and universally correct. There are a few cases in which a patient may be in danger from hemorrhage. A varicose cluster becomes larger and larger; the skin over it becomes more attenuated, at last it gives way, and there is a great discharge of blood. I have heard of patients actually dying from this hemorrhage, where assistance could not be procured. I have known a great many cases in which patients have lost a very large quantity of blood from such an occurrence; and I have heard of others in which death was the consequence.

Varicose clusters of veins sometimes become inflamed. They are then tender to the touch. Frequently the inflammation is preceded by a rigor, or by an attack of fever. In some instances the inflammation extends to the skin over the cluster, the skin becomes red, and if the patient stands up, he suffers great pain in the inflamed varix, but if he lies down, the pain is in some measure relieved, though not entirely. The great pain in the erect posture is explained by the weight of the column of blood pressing on the tender parts.

In some cases inflammation of an inflamed varicose cluster will end in suppuration, and in an ulcer, but that is not the way in which ulcers connected with varicose veins generally begin. For the most part, the effect of inflammation of a varicose cluster is not to produce either abscess or ulcer. It is very remarkable that the blood in inflamed varicose veins coagulates, and the vein becomes choked up with the coagulum. There seems to be something in an inflamed vein that is unfavourable to the fluidity of the blood which it contains. You observe this not only when varicose veins are inflamed, but when veins are inflamed under other circumstances. You find this frequently in cases of piles. A patient comes to you with an external pile, which is large, and very tender—it is inflamed. At first it contains fluid blood, but in a day or two it becomes filled with solid matter; and if you slit open such an inflamed pile, you find a solid lump of dark-coloured fibrin. If you slit open an inflamed varicose cluster in the leg, under these circumstances, you will find that the cavity is filled up in like manner, with coagulated blood. I mention this, that you may recollect what takes place in these inflamed veins, not recommending the practice, which is quite wrong, as I shall explain by and by. The effect of such inflammation is to give the patient a



good deal of pain at the time, but he is benefited by it afterwards. The coagulium fills up the vein, the vein becomes obliterated, and the varicose cluster is cured: others may form, but this one is cured. So in an inflamed pile, other piles may form, but the first is cured, and never troubles the patient afterwards. By degrees the inflammation subsides, the coagulium becomes gradually absorbed; as the absorption proceeds, the sides of the vein approximate, and the cavity is obliterated.

In old cases of varicose veins, you will frequently find the skin become inflamed—that is, it will look red, and be very irritable and tender. Sometimes you find the cuticle as it were abraded, and an ichorous discharge takes place from the red cutis. In some cases the whole of the skin of the leg is in this condition. In others there is a chronic inflammation of the cellular membrane. There is effusion of serum into it, and the limb becomes œdematous. When there is disease of the heart, preventing the due passage of the blood through its cavities, the fluid part of the blood is liable to escape from the capillary vessels, and thus you have anasarca of the legs. But the swelling which takes place in varicose veins does not exactly correspond to anasarca connected with disease of the heart. It is the result of an inflammatory action in the cellular membrane; the fluid has a more distinctly serous character. If you puncture the parts with a needle, the fluid being of greater consistence, does not flow out so rapidly as the thinner fluid escapes after puncture in the case of anasarca.

The inflammation of the skin, and the inflammation of the cellular membrane, in these cases correspond with each other. There is an exudation of serum in one case from the surface of the skin, and in the other from that of the inflamed cellular membrane. These inflammations seem to correspond with those which we meet with in other cases of venous congestion.

But in some instances you find inflammation taking place of a different kind, in the cellular membrane, immediately surrounding the varicose cluster. The cellular membrane becomes infiltrated with coagulated lymph, and then the varicose cluster is, as it were, imbedded in a considerable mass of indurated substance. At first you would suppose that the veins there are obliterated, but they are not. You have a deposit of lymph on the outside, and the blood remains quite fluid. If you put your finger on the hard lump, the course of the vein is readily distinguished by the fluidity of the blood. You feel the fluid blood passing in an open channel, as it were, through a hard or gristly mass. Where there is this deposit of lymph in the cellular membrane round the vein, the skin becomes inflamed, and it may give rise to a troublesome ulcer.

But still, a varicose ulcer does not generally begin in this manner. Usually, the skin being distended at some point, a scab forms upon it. Then the scab comes off, there is an ulcer, and the ulcer spreads. The varicose ulcer, in most instances, begins about the inner ankle; but it may occur, as in the patient whose case is now before us, in other parts of the leg.

Varicose ulcers, in most cases, have a well-marked character, for which, however, you are not at this time to look in this patient, who has been confined to her bed for nearly a week. For the true character of varicose ulcers, you must look at a patient's legs who has been walking about up to the time of your seeing her. Varicose ulcers are inclined to assume an oval form, the long diameter of the oval extending in the course of the vein upwards and downwards. These ulcers are generally nearly on a level with the surface of the surrounding skin. The surface of them is dark-coloured when the patient is erect, and when the small veins are filled with blood; but when the patient lies down, the surface becomes florid. The change takes place very speedily from dark to florid, and from florid to dark. The skin, and the margin of the ulcer, are generally of a dingy-red colour, and partly deprived of the cuticle, so that it is difficult to say where the latter terminates and the ulcer begins. These ulcers are generally very irritable and painful, and sometimes are disposed to bleed.

These are the principal circumstances that I have to notice respecting the history of varicose veins of the legs; and now I shall offer to you some observations respecting the treatment to be employed.

Why is it that the superficial veins enlarge, and not the others? Because, as I have already explained, the deep-seated veins have pressure made upon them on every side, but the superficial veins have not. The first thing for you to consider in the treatment is, whether you cannot put the superficial veins, which are dilated and varicose, under the same circumstances with the deep-seated veins which are uniformly supported. This may be accomplished by applying a bandage to the leg. And what kind of bandage? In many cases you may apply merely a partial bandage of adhesive plaster, which will answer the purpose perfectly, giving the patient scarcely any inconvenience. Where the disease is of limited extent—where, for instance, there are only two or three varicose clusters, of small size—you need not trouble the patient with a complete bandage for the whole leg. Have some stripes of adhesive plaster, three or four inches long, according to circumstances, and one inch or an inch and a half wide. First of all, let the patient stand erect, that you may ascertain exactly where the varicose clusters are situated. Having marked the place, let the patient recline and let the foot be raised, so that the blood may run down, and the varix become completely empty. Observe, that the heel ought to be the highest part of the whole person. Then you put on one of the pieces of adhesive plaster across the varicose vessels, and afterwards apply the others in the same manner, drawing up the skin under them, and taking care that the plaster is not thrown into rucks or folds. These plasters being applied when the veins are empty, and being strained on the skin beneath, when the patient stands, the veins are prevented swelling. In a great many cases you will find that this is sufficient to give all the support required, and perhaps this is all that the patient needs for the whole of his life. A lady consulted me, some years ago, with two or three varicose clusters on the inner ankle and on the back of the leg, but with no vari-



cose veins of any consequence elsewhere. I put on some pieces of plaster in the manner which I have described. I mention this case only for this reason—that I recommended the treatment seven or eight years ago, and that lately, when she came to London to consult me on another disease, she told me that she had worn the plaster up to this time, and that it had given her complete relief: she had never had occasion for any thing else. But when the veins of the legs are extensively varicose, this compression will not be sufficient, and then you must apply a bandage for the whole leg. There are different kinds of bandages, and sometimes one sort will answer best, and sometimes another. You may use a common roller of coarse unbleached calico, such as we use in the hospital. In some persons you will find a flannel roller more convenient; at any rate, the patient can apply it better for himself. In private practice I frequently recommend a bandage which is made of stocking web. This is a very nice bandage, and very convenient, as the patient can more easily apply it for himself: there is not the dexterity necessary which is required in the application of a common roller. But it will not do for hospital practice, because the bandage is good for nothing after it has been three or four times washed, and because it is too expensive for the lower class of persons.

I must here make a few observations respecting the application of a roller. A bandage should be applied in the morning before a patient goes about, but it need not be worn in the night when the patient lies down. The bandage should begin at the toe, and go up the leg; and you should take care so to apply it as to support the heel. It should be so adapted to the limb as to make uniform and moderate pressure. The pressure should be as nearly as possible equal throughout. Especially it ought not to be tighter above than it is below, for in that case the veins below, where the pressure is least, must necessarily swell. A tight garter increases varicose veins; and the patient ought to be told not to wear a garter at all, but to loop up his stocking. A bandage which is tighter above than below corresponds to a tight garter. But some persons cannot well apply a bandage for themselves, and for them you may prescribe a laced stocking, which is in many respects very convenient. Patients who are awkward in applying a bandage may manage the laced stocking very well for themselves. Laced stockings are made of various materials. The Chinese manufacture a calico called *nanquin*, which is a very good material for the purpose. Some laced stockings are now made partly of Indian rubber cloth, so that they are elastic. An ingenious artist in Jermyn street makes a laced stocking of spiral wire, like the springs of braces, but of very fine texture, included within folds of leather or something else. Whether you use spiral wire, or Indian rubber, it is not necessary that the whole of the stocking should be made of the elastic substance; you only want elasticity in a part of the circumference. In most cases I find the Indian rubber cloth to be the best of these elastic materials. Patients complain of the elastic wire cloth being very hot, and besides, if any thing, it makes rather too much pressure. Indian rubber cloth, however, is not very well adapted for

hot weather, as the cloth gives way so, that there is not a sufficient support, and hence it does not answer so well as common calico or nanquin in hot climates. However, you will find that each kind of laced stocking has its advantages in particular cases.

So much as to the general treatment of varicose veins; but now we are to consider their treatment under peculiar circumstances. Let us suppose, then, that you are called to a patient in whom there is a varicose cluster of veins in a state of inflammation. There is a great deal of tenderness in the part, and perhaps some fever. The first thing you have to do is to keep the patient in bed, in the horizontal posture, so as to keep the veins emptied of their blood. Then, if there be much inflammation, and the patient suffers a good deal of pain, you may apply leeches; but do not apply them immediately over the veins: they should be applied higher up on the leg, on the sound skin. The biting of a leech over an inflamed vein will give the patient a good deal of pain, and the bite will be difficult to heal. If you apply it on the sound skin in the thigh, or the upper part of the leg, you will relieve the varicose veins just as much as if you had applied it upon them, without giving the patient pain at the time or any trouble afterwards. You may then apply to the inflamed varix a compress wet with spirituous lotion, unless the pain be very great, and then you may use poultices and fomentations instead.

When inflamed varicose veins are distended with coagulum, it used to be the practice formerly to slit open the vein, and turn out the coagulum, but it is not the practice that I should recommend. It is, in fact, very bad practice, and in order to impress this observation the more upon your minds, I will mention a particular case, which I found this morning in looking over one of my old case books. It occurred upwards of twenty years ago. A patient was admitted into the hospital with two or three large clusters of varicose veins. They were all in a state of inflammation; the upper one was the most inflamed. The patient said that she had had the disease for some years, but that about a week before her admission she had stood for a long time upon a cold stone floor, on a cold damp day. She went to bed, and had a shivering, which was followed by fever, and then this attack of inflammation of the veins took place. I could feel that the blood had become coagulated. I opened the upper varix and let out the coagulum; but the varices below were treated with cold lotion, or in some other simple way. Under this treatment the inflammation very soon subsided in the varicose clusters below, the absorption of coagulated blood began to take place, and the clusters were cured. But observe what happened in the cluster that I had punctured. The puncture became an ulcer, which would not heal, but became very troublesome. At the end of six weeks when the other clusters were well, there was a nasty sore here. I was obliged to make a slough with caustic potash, which I suppose destroyed the remains of the vein which had been opened. The slough came away, the sore assumed a healthy character, and got well, but certainly the patient would have been well some six or eight weeks sooner, if I



had pursued the same practice with the upper varicose cluster which I adopted with the lower ones.

The treatment of these clusters of inflamed varicose veins should be just this:—lay the patient in bed; put a cold lotion on the part, or fomentation and poultices if you find these to be more comfortable to the patient; administer purgatives according to circumstances; and if there be much inflammation, but not otherwise, apply leeches to the sound parts above. The result will be, that the veins of the inflamed varix will become obliterated, and the varix will be cured.

---

### LECTURE XIII.

ON VARICOSE VEINS AND ULCERS OF THE LEGS. (*Continued.*)

I HAD not an opportunity of completing, in the last lecture, my observations on varicose veins of the leg. I explained to you the pathology, the symptoms, and the consequences of the disease; and I began to speak of the treatment which it requires: I shall continue the latter subject in the present lecture.

In those cases in which, from long neglect of varicose veins, the skin of the leg becomes red and irritable, you will be able to render the patient no service so long as he is going about, standing and walking as usual. The first thing to be done is, to confine him to his bed, or at all events to a sofa; but the safest method is to confine him to his bed, and the horizontal posture, so that the blood may not have to rise up in the leg against its own gravity. In many cases nothing more is necessary than this; but, in some instances, this will afford but very slow relief, and in all cases you may hasten the patient's recovery by adopting other methods in addition: I have frequently, in these cases, bled the patient in the vena saphena major, in the lower part of the thigh, near the inner condyle; and it is astonishing what relief that gives. It is not worth while to adopt this practice in all cases, but where you find the patient suffering more than usual from the inflamed state of the skin, you may very properly have recourse to it.

Bleeding in the vena saphena major is performed very easily in persons who are not very fat; place the bandage round the lower part of the thigh, let the patient put his leg into a pail of warm water, and what with the warm water below and the bandage above, the vena saphena swells; you then open it with a lancet, and take away any quantity of blood you please. But, in a very fat person, bleeding from the vena saphena is not very easy to be accomplished, and as a substitute for it you may apply leeches to the inside of the thigh, or you may apply them in this situation in other cases where you do not think that actual bleeding in the vena saphena is required. And here I must call to your recollection what I said respecting the ap-

plication of leeches, under these circumstances, in my last lecture. Never apply leeches to the inflamed part, but always at some distance above it. If the whole skin of the leg be inflamed, then apply them on the inside of the thigh; if the leg be inflamed in the lower part, and not in the upper, then apply them on the leg, but above the inflammation. Besides the application of leeches, you may, in the first instance, apply a rag, wetted with cold spirituous or saturnine lotion. When the inflammation of the skin has subsided, you may begin the use of bandages in the way which I described in the last lecture.

In some cases, as I formerly told you, the skin is not only inflamed, but more or less excoriated, the cuticle being abraded to a greater or less extent, while the surface of the cutis secretes an ichorous fluid. Here, also, you may take away blood from the vena saphena major, or from the inside of the thigh by leeches, and the patient will also derive benefit in these cases from the application of a saturnine lotion, though, for the most part, some mild cerate answers the purpose better. The zinc ointment or calamine cerate answers very well; but we use, in the hospital, a preparation known with us by the name of compound chalk ointment, which is much preferable. It is, if I am not mistaken, now introduced into the Pharmacopœia under the name of *Ung. plumbi compositum*. It is an excellent application in these and other cases where the surface of the cutis is deprived of the cuticle. This ointment was invented by Dr. Kirkland, a celebrated practitioner many years ago in Leicestershire, and I believe it was commonly known under the name of Kirkland's neutral cerate. It is composed of diachylon plaster, olive oil, chalk, and distilled vinegar. How it should have ever entered into any man's head to make such a composition as this, I do not know, but the composition having been invented, I must say it is a very useful one. The ointment should be spread on linen rag, and applied in stripes round the leg, each stripe overlapping the one below. In some cases, in addition to the use of chalk ointment, you will find advantage from washing the surface with a weak solution of nitrate of silver, in the proportion of two or three grains to an ounce of rose water. A strong solution would here be improper, but a weak solution is very useful.

I told you that in some cases there was œdema, a swelling of the leg and foot, in consequence of the inflammation of the cellular membrane, causing it to be infiltrated with coagulated lymph and serum. The treatment that is required under these circumstances is very nearly the same as that which is necessary where there is inflammation of which I have just spoken. The patient should be kept in the horizontal posture; blood may be taken either from the vena saphena major, or by leeches from the thigh, and generally you will find the latter quite sufficient. You may apply a cold lotion in the first instance, but very soon, in these cases, you should begin to apply a bandage, such as will give an uniform support to the leg from the toes to the knee.

In cases of varicose ulcers of the leg, if you find that the patient has neglected himself, that the ulcer is in a state of inflammation, foul



and painful, as it often is, and the surrounding skin being in a state of inflammation also, you must keep the patient in bed, and treat him as if the leg were inflamed without the existence of the ulcer. But as soon as the inflammation of the ulcer and the surrounding parts has been relieved, you may begin the application of pressure. The pressure of a common roller will do a great deal of good, and formerly nothing else was recommended. But we find, now, that in cases of varicose ulcer, as in cases of indolent ulcer of the leg, you may very much assist the common roller by the addition of other means. One very good way of making pressure on a varicose ulcer is to interpose between it and the bandage a piece of sheet lead, such as is used in anatomical museums for covering preparations. The lead should be made quite smooth, and larger than the ulcer, extending some way beyond its margin. This makes a very uniform pressure, and really does very well. But for the most part we are in the habit of using pressure by means of plaster applied in a circular manner round the limb. It is common to employ stripes of linen spread with soap or adhesive plaster, but I own that I very much prefer diachylon plaster, for both soap plaster and adhesive plaster will frequently irritate the skin, and bring on inflammation and pustules, but diachylon plaster scarcely ever produces this effect.

You have an opportunity of seeing stripes of diachylon plaster applied every day, and over and over again every day, in the wards of the hospital; and, therefore, it might seem almost superfluous for me to make any observations on the mode of applying them. But I find that new dressers very seldom apply them in the manner that I believe to be proper, and therefore I shall offer to you some observations on that subject.

In the first place the stripes should be applied round the limb, the two ends crossing each other in front, the application beginning below the ulcer, and extending some way above it. Each of the stripes ought to overlap the one below by one-half of its diameter. Thus every part has a double piece of plaster over it, and you secure more equal pressure than you could otherwise obtain. It is of great consequence that the plaster should be tight enough to give comfortable support to the limb, and at the same time not so tight as to make the limb swell below; for if it does produce this effect, it is very likely that it will bring on a sloughing of the sore. The plasters ought to make uniform pressure—that is, the pressure should be equal throughout; or if there be any difference in the degree of pressure, it ought to be greater below than above. If you do not attend to this point, the plaster above operates as a tight garter, and makes the parts below swell.

When you apply the plaster, it should always be with the heel raised, the patient lying flat on his back, so that the vessels of the leg may be emptied of their blood. The same plan should be adopted when the plaster is taken off. If the leg be hanging down at the time the plaster is applied, the veins are full of blood, and the plaster becomes too loose as soon as the patient puts his leg up.

The plaster, if there be much discharge, should be changed daily;

but as the discharge becomes less in quantity, it may be changed every other day, or once in three days, and in some cases it may be left on even longer than that.

Frequently, in cases of varicose ulcer, you find the veins on each side of the leg just above the heel, and behind the ankles, formed into a varicose cluster. A bandage applied in the common manner does not sufficiently support these veins. The ulcer may be above, and you may cover it with a bandage; but if there be such veins as I have mentioned below, you must not, for obvious reasons, leave them uncovered.

In order to support these veins, some stripes of plaster should be applied round the lower part of the heel, extending upwards in a longitudinal direction on each side of the leg. Let these be held firmly on while you apply the circular stripes over them, in order to keep them in their place. In this case also, in the application of the bandage, you ought to pursue the same course: a longitudinal bandage, extending under the heel and up each side of the leg, should be applied first, and this covered by a circular bandage afterwards. These may appear matters of little importance, but a great deal of your success in practice will depend on your attention to such minutiae. It is not enough to understand the case, to make a good diagnosis, and to know what remedies are to be employed; you should also take pains to apply these remedies in the best possible manner, otherwise they may fail in producing their effect. In some cases of varicose ulcer you will promote the healing of the ulcer by touching it every other day with a strong solution of nitrate of silver in water, beginning with five or six grains to an ounce, and increasing the strength gradually. But I do not advise you as a general rule to put any application in the way of dressing under the plaster. I find a new dresser frequently interposing a piece of lint, with or without simple ointment, between the plaster and the sore. It is a very injurious practice; it keeps the sore slopped with its own discharge; it prevents the plaster from making that uniform and regular pressure which is required. When the sore has been healed, the patient should continue to wear the plaster for *some time* afterwards, otherwise the cicatrix will give way, and for the same reason he should *ever* afterwards wear the bandage.

Other methods of treating patients labouring under varicose veins have been proposed by surgeons in former times, and also of late years. They have proposed to relieve or cure the disease by performing operations upon the affected veins. I need not carry you back to the propositions of Celsus on this subject, nor even to those of Heister. I shall only speak to you of methods that have been suggested within the last 30 or 40 years.

Sir Everard Home recommended the application of a ligature, where the veins of the leg were varicose, to the vena saphena major. He performed this operation in a great number of cases, and in a few cases he applied it to the vena saphena minor. When I was a student, nothing was more common than to see a patient with varicose veins standing on a table, and leaning over the back of a chair, to



have this operation performed. The skin was divided; a silver needle, armed with a ligature, was passed under the vein, and the vein was tied. In many instances, at first, no ill consequences ensued; but by and by a private patient of Sir Everard Home became affected with venous inflammation, and died. The same thing then occurred in another patient. When I was house-surgeon here, there were two women on whom the operation was performed, in each of whom venous inflammation, attended by typhoid symptoms, supervened. Fortunately they did not die, but they had a very narrow escape. The operation was performed by other surgeons, and in their hands also it was found that every now and then venous inflammation was brought on, which ended fatally. The operation was then generally abandoned. Mr. Abernethy remarked,—“I dare say it is only the ligature that brings on the inflammation. You divide veins when you amputate, and they do not become inflamed; why should you not merely cut across the vena saphena, and put on pressure?” He was mistaken in his view of the matter, which was not indeed much understood by surgeons at that time. We now know that the veins after amputation not unfrequently inflame, and that this is one of the most common causes of death after amputation. When I was first assistant-surgeon there was a man with very bad varicose veins; such a case as those in which the vena saphena would formerly have been tied. I did not tie the vein, however, but I followed Mr. Abernethy’s advice, cutting it across, and applying a compress and bandage. The patient had venous inflammation, attended with very severe typhoid symptoms, and died within four days after the operation. Since then, as you may suppose, no operation has been performed on the vena saphena, either by ligature or in any other way. There are no circumstances here to justify the performance of a dangerous operation. You may perform dangerous operations to get rid of a disease still more dangerous, but you have no right to perform an operation attended with such a degree of danger as can be appreciated, in order to get rid of a disease which is not dangerous; and no one can say that varicose veins belong to the class of dangerous diseases. But still there is another reason against having recourse to this operation. I do not believe, from any thing that I have formerly seen, that the operation permanently benefited the patients. It is true that they appeared to go away a great deal better, but I now and then saw one of them a year or two afterwards, and I always found them as bad as ever. Indeed, I am by no means certain that the benefit which the patient appeared to derive, in the first instance, was the result of the operation; and I am more inclined to believe that it arose from his having been necessarily kept for some time in bed in the horizontal posture. Patients always appear to get better under these circumstances. But I may observe further, that there appears to be no reason why in ordinary cases of varicose veins the obliteration of the saphena major should do any good, and that there are better grounds for believing that it will do harm. If you stop the vena saphena major you prevent the due return of blood to the heart, so that it is likely that the veins will become worse than

they were before. Have I not shown to you that pressure on large venous trunks causes an obstruction of the blood in passing through them? that this is one common cause of varicose veins? In *very bad cases*, however, of this disease, I can understand why the patient should derive benefit from tying the vena saphena major; and in order that you should understand what I now state, I must explain to you the different condition of the parts where the veins are very much dilated, and where the disease has only proceeded to a limited extent.

If the veins are but little dilated, or dilated only in particular places, the valves can still continue to answer the purpose for which they are designed. If the vena saphena major be not at all dilated, while the smaller veins of the leg are dilated, the valves of the vena saphena major act perfectly, and take off the weight of the column of blood pressing on the veins below; but if the vena saphena major be itself considerably dilated, its valves then are of no use. I have sometimes seen a very curious result from this. I had a patient, for example, in whom there was an unusually large cluster of varicose veins on the inside of the leg, while the vena saphena major was of enormous diameter, so that the valves could evidently be of no use. If I put on a bandage and squeezed the blood out of the veins below, and then put my thumb on the vena saphena major above, so as to stop the circulation through it, I found, on taking off the bandage, the patient being in the erect posture, that the cluster of veins below filled very slowly from the capillary vessels. But if, the patient being in the erect posture, I took off my thumb from the vena saphena major, the valves being of no use, the blood seemed to flow down from the trunk of the vena saphena major, contrary to the circulation, and filled the varicose cluster below almost instantaneously. I can understand that a ligature upon the vena saphena major, under these circumstances, would in a great degree lessen the inconvenience arising from the distension of varicose veins below. It would answer the same purpose as the pressure of my thumb, but still it is not to be supposed that the good thus obtained would counterbalance the chance of mischief resulting from the operation.

I was occupied, many years ago, in making experiments on the obliteration, not of the vena saphena, but of the veins themselves. I applied caustic so as to penetrate through the skin to the veins, and in this way I cured many varicose ulcers. Mr. Mayo has, as I have been informed, employed the same practice lately, with this difference: he has not gone far enough to make a slough of the vein, but brought on some inflammation which has caused the vein to become obliterated. I tried this method in many cases, but I cannot say that I have found it answer sufficiently to make it worth the patient's while to submit to it. The application of the caustic was very painful, the slough took a long time to separate, the sore took a considerable time to heal, and though one cluster was cured, other clusters appeared. Altogether it was a very tedious process, and my own experience does not lead me to recommend it.

Then I contrived another method. Though there is danger in



cutting across large veins, or in tying them, there does not appear to be any danger which can be appreciated from the ligature of smaller veins. Piles are nothing originally but varicose veins; now I have performed operations for internal piles, I cannot tell you how often, for there is nothing in the practice of surgery more common; but I have never yet seen a patient have venous inflammation arising in consequence.

We frequently cut across small veins in operations, and they are divided by accident, but we never find venous inflammation supervening. Although there may be danger from operations on the vena saphena major, we have no right to expect danger from operations on the smaller veins. I contrived, then, the following method. Supposing that I intend to cure a particular cluster of veins, I use a sharp-pointed bistoury, which cuts, not like a common bistoury, on the concave, but on the convex edge. I puncture the skin with this instrument on one side of the varicose cluster; I carry the blade under the skin, between it and the varicose veins, over to the other side of the cluster; and having carefully performed this part of the operation, the skin over it remaining entire, except where the first puncture was made, I turn the edge of the instrument backwards, and drawing it out, cut across the cluster. A good deal of hemorrhage follows, but the pressure of a compress commands it, and a bandage is applied afterwards. The wound, in most instances, heals by the first intention. The varicose veins are obliterated, and usually in a few days the patient suffers no inconvenience from the operation. However, in some cases, the wound suppurates, instead of healing by the first intention, which protracts the cure. Then, in other cases, a remarkable occurrence took place. Although I was satisfied that the cluster was divided, the disease was not cured. It seemed as if the veins healed without being closed. As the ductus choledochus, or the intestinal canal, will heal after the application of a ligature, without the continuity of the canal being destroyed, so it appeared that the continuity of the canal of the veins was not in every instance obliterated.

This was a very easy and a very safe method of curing varicose veins, yet we hardly ever perform this operation now; for, with my present stock of experience, it really seems to me that there are very few cases in which it is worth the patient's while to submit to it. I have always observed that if I have cured one cluster, two smaller ones have appeared, one on each side, so that ultimately I left the patient no better than I found him.

The operation, however, is proper where there is a varicose cluster much distended, and liable to burst and bleed. Here you may actually save the patient's life by having recourse to it; and you may do so without considering whether fresh clusters are or are not likely to form afterwards. Sometimes when there is a varicose cluster above and below on which a varicose ulcer depends, you get the ulcer to heal sooner than it otherwise would by dividing the cluster. I do not recommend this generally in cases of varicose ulcer, but only every now and then where there is unusual difficulty in getting it to

heal. I generally observe that it heals sooner if you divide the cluster below than the cluster above. Then there are some cases where a varicose cluster is productive of an unusual quantity of pain, apparently in consequence of there being some nervous filament lying over it which is kept on the stretch. There you may relieve the patient from the pain of the particular cluster by the division of it. But these occasions are of rare occurrence; and under other circumstances I really do not think that it is worth the while of any patient to submit to the operation.

I ought not to take leave of the subject which is before us, without referring to a very ingenious method of obliterating varicose veins, which has been lately adopted by M. Velpeau, of Paris. He introduces a pin or needle through the skin, which is passed underneath the vein, and at right angles to it. A twisted suture is then applied round the two ends of the pin, so as to compress the vein sufficiently to produce its obliteration. I cannot, from my own experience of this practice, say any thing of its advantages or disadvantages; but must acknowledge that it seems not improbable that it may be preferable to the other methods of which I have given you a description. Still, the observations which I have made as to these other methods, apply equally to this. It may be useful in certain cases, and under peculiar circumstances; but I can see no reason to believe that you would be justified in having recourse to it on ordinary occasions.

---

## LECTURE XIV.

### ON CORNS AND BUNIONS.

It cannot be doubted that the physical condition of man is, on the whole, much improved by civilization; but it is not so in all respects, and the usages of society are productive of some evil, combined with much good. The evil affects the weaker more than it does the stronger sex; and among the former, those who belong to what are called the higher classes, suffer more than those who belong to the lower. Young ladies, living much in heated rooms, taking little exercise in the fresh air, over-educated as to the acquirement of accomplishments, and using their muscles too little, lose the beautiful figure with which they were endowed by nature, and become afflicted with curvatures of the spine, and weakness and distortion of the ankles. The same mode of life renders them liable to the innumerable varieties of hysterical disease, which in so many instances destroy the whole comfort, and I may say the dignity, of existence, enervating both the body and the mind, and making their condition altogether much less desirable than that of the poor peasant girl.

There is another order of diseases which we meet with more frequently among females of the higher classes than among other per-



sons—namely, corns and bunions; and it is to this last humble, but not unimportant subject, that I propose to call your attention in the present lecture.

A corn is in the first instance a thickening of the cuticle. Whenever the cutis is habitually subjected to the influence of pressure, it secretes a thick and horny cuticle. We find examples of this in the hands of many mechanics, and in the soles of the feet in those who walk much. But every thickening of the cuticle is not a corn, and this name is applicable only to those cases in which the cuticle is thickened over a projecting portion of bone, on which the pressure is, as it were, concentrated. Corns may occur in any part of the body in which this combination of circumstances exists; but, for obvious reasons, they are met with in the feet much more commonly than anywhere else.

If shoes were constructed of the shape of the human foot, neither too large nor too small, and making an equal pressure everywhere, corns and bunions of the feet would never exist. But, unfortunately, shoes are seldom made after this fashion, and in ladies' shoes especially there are generally two signal defects: first, the extremity of the shoe is much too narrow for that part of the foot (namely, the toes) which it is to contain; and, secondly, for the purpose of displaying as much of the foot as possible, the whole of the tarsus and metatarsus is left uncovered, and the pressure of the shoe in front is thrown entirely upon the toes. The toes are thus first squeezed against each other, and then pushed out of their natural position; and all the projecting points, chiefly where the joints are situated, are pinched and tormented either by the neighbouring toes or by the leather of the shoe, and thus it is that corns of the feet are generated.

In order that you should understand the precise situations in which corns are most likely to take place, you must consider more particularly the effects which the pressure of the shoe produces on the toes. The little toe is pushed from its parallel position, so that it is in fact underneath the fourth or adjoining toe, and corns are generated on its outer surface over the prominences of its joints. A corn is also frequently met with in the angle between the little toe and the next toe, where the first phalanx of the former is pressed against the head of the metatarsal bone supporting the latter. Sometimes the consequence of wearing a very narrow shoe is, that one of the toes (and it is generally the second or fore-toe) is pushed upwards, so that it lies over the two adjoining toes, that is, over the great toe and the third toe, the extremities of which come in contact underneath; then the leather of the shoe is drawn tight over the upper surface of the second or displaced toe, and corns are produced over one or more of its articulations. At other times one of the toes (and in this case also it is generally the second toe), is displaced in another way. The extremity of it is pushed downwards, so that it lies beneath the extremities of the two adjoining toes, which come in contact over it. But this change cannot take place while the three phalanges of the displaced toe remain in a line with each other. The first and second phalanx make an angle, projecting upwards. The second joint of

the toe becomes prominent above, and a corn is formed over it. If the shoe, instead of being too narrow, be too short, for the foot which it contains, the last phalanges of all the smaller toes are kept constantly in a half-bent state, and a row of corns is generated, one being situated on the upper part of the last joint of each of these toes. I have endeavoured to enumerate what may be regarded as the most ordinary localities of corns; but of course they may be produced anywhere else; according to the shape of the shoe, the mode of walking, and other circumstances.

I have said that a corn is, in the first instance, a thickening of the cuticle secreted by the cutis, when it is kept in a state of constant irritation by the operation of external pressure squeezing it against a prominent surface of a bone. But a complete corn is more than this. A bursa, or bag of synovial membrane, similar to those bursæ which are of original formation, but of a very small size, is formed between the thickened cuticle and the cutis; and it is this combination of thickened cuticle, with a subjacent bursa, which constitutes a perfect corn. This is a fact which you may easily verify for yourselves, as the opportunities of dissecting corns are abundant in the dead-house of the hospital.

The thickened cuticle of those corns, which are situated externally, becomes dry, and hard, and horny; while that of the corns which are situated between the toes remains soft, and to a certain degree moist; and this gives rise to the distinction between hard and soft corns. I shall speak to you of hard corns first,—of soft corns afterwards.

A hard corn, when it begins to be formed, is productive of no other inconvenience than of a slight degree of pain and tenderness after much exercise. The pain and tenderness increase, so that the patient in the evening is glad to take off the leathern shoe, and put on a large slipper. Then the whole foot, after exercise, is hot and uneasy. These symptoms subside with rest, and the absence of pressure, during the night, but return with the wearing of the shoe and exercise during the day. By and by the bursa under the horny cuticle becomes inflamed, and distended with fluid, and the pain is much aggravated. But the sufferings are greatest in those cases in which the bursa suppurates. An abscess forms in parts which are incapable of distension, and you know how much mischief even a very small collection of pus, under such circumstances, may occasion. I was sent for to an old gentleman who was suffering excruciating pain in the whole foot, which was red, and much swollen, the swelling extending up the leg considerably above the ankle. In one toe, and in the neighbouring part of the foot, the tenderness and other marks of inflammation were greatest, and here I discovered an old neglected corn. He could scarcely bear the corn to be touched; however, I carefully removed the hard cuticle with a scalpel, and made an opening into the bursa under it. Not more than a drop of matter escaped, but this was sufficient to give immediate relief. On the following day he was well. I was desired to see another patient, a young lady, under the same circumstances, except that the symptoms



were more severe. The inflammation involved nearly the whole leg, and there was a frequent pulse, and much general excitement. I removed the thickened cuticle of a corn on one of the toes, and allowed a very small quantity of pus to escape which was collected beneath it. This gave immediate relief, and on the following day she was all but well. Several similar cases have fallen under my observation.

I have already mentioned that the most common seat of a soft corn is in the angle between the little toe and the fourth toe, over the head of the metatarsal bone which supports the latter. Occasionally, however, a soft corn occurs elsewhere—as, for example, on the inside of the little toe, opposite to the last joint of the fourth toe. Such corns are even more painful than hard corns, except when suppuration takes place in the bursa, and then the suffering is less in proportion, as the thickened cuticle of a soft corn admits of distension more easily than that of a hard corn.

Under ordinary circumstances, it is easy to give temporary relief to a patient who suffers inconvenience from a hard corn. The thickened cuticle should be removed, so as to lessen the pressure on the parts below; and this may be accomplished in various ways. *First:* If the corn be of long standing, and a piece of linen or thin leather, spread with some mild plaster (diachylon, for example), be applied, and worn over it, it will sometimes exfoliate or separate without further trouble. *Secondly:* The corn may be rubbed with the nitrate of silver, or (which is indeed preferable) the concentrated nitric acid may be applied by means of a probe armed with lint. The texture of the cuticle being thus destroyed, exfoliation will take place, so that in the course of a few days the corn may be readily peeled off. *Thirdly:* The corn may be reduced in thickness by scraping its surface with a very fine steel or fish-skin rasp. And, *fourthly:* The corn may be removed by means of a fine cutting instrument. This last is the shortest and simplest method; and the patient may keep himself in a state of comfort by procuring the assistance of a dexterous chiropodist at stated periods, who will perform this operation for him better than he can perform it for himself.

With a view to a permanent cure, however, it is necessary to have recourse to other methods of treatment. In some way or other all undue pressure must be removed from the part on which the corn is situated. *First,* the shoe must be made as nearly as possible to the shape of the foot, and it must cover the metatarsus and a portion of the tarsus, so that the whole pressure may not be thrown on the toes; or a boot made to be laced or buttoned may be worn instead of a shoe. In some cases it is advisable that the shoe or boot should be made, not of ordinary leather, but of very soft and flexible buckskin, or of cloth. A material for shoes and boots is sold under the grandiloquent name of *pannus corium*, which answers the purpose intended in these cases very well. It is really a kind of cloth, but it has the appearance of leather, and is very soft and pliable. *Secondly,* if any of the toes are displayed in any of the ways which I have before described, we must endeavour to restore them to their

natural position. In young persons this may be generally accomplished. A contrivance made use of by the bandage makers is very useful on these occasions. It consists of a thin plate of metal covered with thin leather, or a piece of strong leather, fitted to the lower surface of the foot,—not to the whole of the surface, but extending from the extremities of the toes nearly to the tarsus. Slits are formed in this plate of metal or leather, and tapes are passed through these slits, forming loops above, by means of which the toes are bound down and restrained in their proper places. In many cases the same object may be attained by simpler means. A stripe of linen, spread with adhesive plaster, about two-thirds of an inch in breadth, may be passed over the toes which are too elevated, and under the others, the extremities of the plaster being made to cross each other over the metatarsus. If this be neatly applied, it will keep the toes parallel to, and on the same level with, each other. Whichever of these methods be employed, it is necessary that it should be persevered in for a considerable time. In older persons, in whom the toes have been long displaced, they have sometimes become so adapted to their unnatural position, that it is almost needless to attempt to alter it. Under such circumstances we are sometimes compelled, in hospital practice, even to amputate one of the toes, in order that the patient may not be disabled from gaining his livelihood; and this may be occasionally necessary even in private practice. A young lady of rank suffered from a displacement and a distortion of the second toe, such as I have already described. The extremity of it lay under the extremities of the two adjoining toes; the second and third phalanges were nearly ankylosed at a right angle to each other, and a corn was formed on the second joint, where it made a considerable projection above. She applied to me to amputate this offending toe. I answered, “that I would do no such thing; that I might do it for a labouring person, but that her case was entirely different, as she had not to earn her livelihood by her bodily labour.” She replied, “You seem to treat the matter very lightly, but this toe and corn make my life miserable: I can take no exercise, I am unfitted for society, and I have tried all other methods of relief without success.” On inquiry, I was satisfied that she in no degree exaggerated her sufferings, and I therefore complied with her wishes, and amputated the toe at its first joint.

A very simple, but scientific, method of relieving, and indeed of curing corns, is practised by the chiropodists. A piece of buckskin leather, spread with some adhesive plaster, is applied on the toe on which the corn is situated, there being a hole in the leather corresponding to the corn. Thus the pressure of the shoe is taken off the corn, and thrown on the surrounding parts. If this be kept constantly applied, and proper shoes be worn at the same time, the corn will gradually disappear.

In some cases a hard corn is formed on the lower surface of the foot, over the head of one of the metatarsal bones. A corn in this situation is especially troublesome, rendering the patient absolutely lame; but it may be relieved or cured by the method which I have



just explained, only one slight modification of it being required. The hard cuticle being removed, a broad piece of buckskin leather is to be applied, having a hole in it where the corn is situated. But a thin piece of calico spread with adhesive plaster, and having no hole in it, is to be applied first; that is, between the leather and the foot. Without this last contrivance the flesh of the foot, when the patient walks, bulges or projects into the hole of the leather, so as completely to fill it up, and the patient's condition is rendered rather worse than better. The calico with adhesive plaster prevents this inconvenience, at the same time that it does not prevent the leather answering the intended purpose of taking the pressure off the corn, and throwing it on the surrounding parts. I may observe, by the way, that the same method is applicable to some other affections of the lower surface of the foot, as well as to corns.

When abscess is formed in the bursa under a hard corn, the treatment to be employed is very simple, although the relief it affords is immediate and great. You are to pare off the hard and thick cuticle, and open into the bursa, so as to allow the small quantity of pus which it contains to escape. Thus the corn is effectually destroyed, both the cuticle and the bursa; and it is very easy, by means of the expedients which I have just recommended, to prevent it being regenerated.

The treatment of soft corns is to be conducted on the same principle with that of hard corns; some modification of it only being required, on account of their peculiar texture and situation. The thickened cuticle may be removed by means of the concentrated nitric acid, applied so as to penetrate into its substance, but not to the parts beneath. This destroys its texture, causing it to become dry and shriveled; and in the course of a few days it begins to exfoliate, and is then readily peeled off. If an abscess forms in the bursa of a soft corn, it should be treated in the same manner as that in the bursa of a hard corn.

In some cases, even though there be no abscess underneath, a soft corn becomes exquisitely sensitive, so that the patient cannot bear it to be even touched; and he is made as lame as if he suffered from the gout or any other painful malady. Such a case fell lately under my observation, which I mention, not because it was peculiar, but because the sufferings of the patient were unusually severe. There was a broad soft corn on the side of one toe, where it came in contact with the side of the adjoining toe, and not in the angle between them. The patient could scarcely walk, even with a loose slipper, and the corn itself was so exquisitely sensitive, that the slightest touch could not be borne. This state of things had existed for many weeks, the corn itself being of a much earlier date. I applied the strong nitric acid until I had reason to believe that it must have penetrated through the thickened cuticle. An increase of pain followed the application, and continued for some hours. On the following day there was a manifest improvement. I was now enabled, without any difficulty, to remove the corn with a fine scalpel. The recovery of the patient was immediate and complete, so that, having been previously quite

lame, he was enabled in less than twenty hours to walk as well as ever.

The first thing to be done for the permanent cure of a soft corn is, that the patient should be provided with a shoe of a proper shape, and that the toes which are in any way displaced should be brought back into their proper position. Now I have already observed that the most common situation of a soft corn is between the fourth toe and the little toe, over the head of the fourth metatarsal bone, and that in this case the little toe, towards its extremity, is always pushed more or less underneath the second phalanx of its neighbour. You will sometimes succeed in bringing the little toe to its proper place by means of a stripe of adhesive plaster, applied round it in the manner of a loop, and then encircling the foot.

In other cases you will find the following method more convenient than that which I have just described:—A piece of *very thick* buckskin leather, spread with adhesive plaster, is to be applied on the inside of the little toe, so as to occupy the whole of the inner surface, from the apex to the second joint. The leather should be cut so as to be thin at its margin; and it should be sufficiently broad to admit of being doubled over a good part of the upper and under surface of the toe, as well as its extremity. This contrivance will keep the little toe at some distance from the next toe, and prevent it from sliding again under it. If both of these expedients fail, the patient must be content to wear for a time the metallic or leathern plate, with loops of tape for inclosing the toes, which I have already described.

The bunion, which is frequently formed on the inside of the ball (as it is called) of the great toe, differs in some respects from the disease of which I have hitherto spoken.

The great toe ought to be in a line with the metatarsal bone, by which it is supported. But a shoe which is too narrow at its extremity, causes it to incline towards the outside, displacing, in a greater or less degree, the toe next to it, as I have explained already. In some cases, the effect of pressure on the great toe is actually to alter the position of the joint between it and the metatarsal bone; a portion of the articulating surface on the extremity of the latter being absorbed, and a new articulating surface being made to supply its place more externally than the old one. The existence of these changes I have ascertained by dissection. Now, the consequence of all this is, that the head of the metatarsal bone makes an unnatural prominence, and is more acted on by the pressure of the shoe than it would be otherwise. The cuticle becomes thickened, not at one particular point, but over a considerable surface, and underneath the skin a large and very distinct bursa is generated between it and the bone. The difference between what I have now described and a common corn, may reasonably be attributed to the large size of the head of the first metatarsal bone, and to the consequent diffusion of the pressure over a broad surface.

When a bunion is once formed, the bursa belonging to it is liable to become inflamed after any unusual degree of exercise, or on it being subjected to the pressure of a more than commonly tight shoe.



Serum is then effused into the cavity of the bursa; the swelling is much increased, and it becomes at the same time exquisitely painful and tender. If the patient remains at rest, the inflammation subsides, the serum effused into the bursa becomes absorbed, and the additional swelling disappears without any further ill consequences. If, however, he continues to walk about, wearing at the same time a tight shoe, the inflammation proceeds further; suppuration takes place, and an abscess is formed. Such an abscess is slow in reaching the surface, and the patient generally suffers severely before it bursts externally; and when it has burst, as the synovial membrane of the bursa granulates with difficulty, the healing of the abscess is very tedious, the parts remaining all the time in a very irritable and painful state.

For the relief of this bunion, when it is free from inflammation, or inflamed only in a slight degree, the following plan of treatment should be adopted:—The patient should be provided with a shoe of sufficient dimensions, of a proper shape, and made of cloth or a soft and pliant leather. A piece of thin calico, spread with diachylon plaster, should be applied over the bunion, covering also some of the surrounding parts; and over this he should wear a piece of thick buckskin leather, spread with adhesive plaster, and having a hole in it, corresponding in size and figure to the bunion from which it is intended to remove the pressure. If the bursa be much inflamed, the patient should be confined to the couch, without a shoe; leeches may be applied in the neighbourhood, and warm fomentations may be employed also. If an abscess be formed, it should be freely opened with a lancet. For some time after the abscess has been opened, no other treatment is required than the application of a poultice, which may be changed afterwards for calamine cerate, or some other simple dressing. Perhaps the abscess may now gradually heal, and no other treatment may be required; otherwise it will be necessary to destroy the inner secreting surface of the bursa by means of some kind of caustic. The concentrated nitric acid answers this purpose very well. The end of a dressing-probe may be armed with lint, then dipped in the acid, and applied for a few seconds to the internal surface of the bursa. A thin slough will, of course, be formed, on the separation of which it may reasonably be expected that the remains of the bursa will contract and granulate: otherwise the application of the caustic must be repeated.

After what I have already said, it is needless for me to trouble you with any observations as to the means which should be adopted for the purpose of preventing the bunion being regenerated.

A case came lately under my observation, in which what appeared like a bunion on the inside of the ball of the great toe contained an albuminous substance, of the consistence of the vitreous humour of the eye, similar to that which is found in the ganglions, which occur in the neighbourhood of the wrist and in some other situations. Whether this was an ordinary bunion, in which the vessels of the bursa secreted this peculiar substance, or whether it was really a ganglion, I was unable to determine. The treatment which I adopted

was that of opening the cyst freely, and applying the concentrated nitric acid to its inner surface. It was necessary to do this with some caution, lest I should injure the joint or bone underneath; and therefore several applications of the acid were required. My object was to destroy the secreting surface, and obtain a granulating surface in its place; and when I last saw the patient, previously to her returning to the country, I had reason to believe that I had succeeded: but I have not heard of her since.

A tumour is occasionally formed on the instep, which, though not exactly a corn, bears a near relation to it. It is met with in young men who wear tight boots, and the usual situation of it is over the articulation, between the internal cuneiform bone and the metatarsal bone of the great toe. The tumour is under the skin, hard and immovable, so that it seems to a superficial observer to be an enlargement of the bone itself. The skin over it is in a natural state, except in cases of long standing, in which the cuticle becomes somewhat thickened. I have had no opportunity of dissecting the parts affected with this disease, and am uncertain, therefore, whether it be formed in the ligaments of the joint or periosteum, or in the ultimate fibres of the tendon of the tibialis anticus muscle, or in what other texture.

Such a tumour is productive to the patient of as much inconvenience as a corn, and it requires the same kind of treatment. He should, for a time, leave off boots altogether; or if he cannot do this, the boot-maker should be directed to provide a last with a projection in that part of it which corresponds to the situation of the tumour, so that the boot may not exercise any pressure on it. A piece of thick buckskin leather, with a hole in it to receive the tumour, will also give the patient immediate relief, and ultimately effect a cure: but the cure, of course, will not be permanent, if he continues to wear tight boots afterwards.

I have seen a tumour apparently similar to that I have now described, in school-boys, situated over the head of the tibia, at the insertion of the tendon of the extensor muscles, commonly called the ligament of the patella, and apparently the result of kneeling, or clambering on the knees: and a tumour of the same kind is sometimes met with on the inner condyle of the femur in those who ride much on horse-back. In either case the avoiding pressure is sufficient to relieve the patient of all the inconvenience which the disease produces. I have known cases, however, in which there have been some remains of a tumour over the head of a boy's tibia ever afterwards.



## LECTURE XV.

## ON POLYPI OF THE NOSE.

UNDER the name of polypus of the nose, although many affections have been confounded, I mean to include simply a peculiar excrecence of the Schneiderian membrane, which is not malignant. This simple polypus is much the more frequent among the higher classes of society, and is most common in *men*. It seldom occurs before puberty. I am not able to connect it with any particular habit. It is common among the Portuguese, and attributed by them to their snuff being adulterated with ground glass. It may be so, but I have not observed that snuff-takers in this country are particularly liable to it, though I believe that snuff is much adulterated here, as much, indeed, as medicine.

The tumour is generally attached by a thin neck to the Schneiderian membrane, or by a narrow pedicle, or a long, thin membrane, continuous with the Schneiderian, but less vascular. The polypus is very smooth, and but little vascular, though sometimes vessels burrow into it. It is gelatinous in density, and appears to consist of coagulated albumen. In a few instances there is but one polypus; but commonly there are two or three, and frequently clusters, so that you can scarcely count them. The colour, which it is essential to notice, is pearl-like, or white, mixed with brown, of an opal appearance. Soft polypi of this kind I have never seen attached to the septum nasi, the inferior turbinated bone, or any part of the nostril, but almost always to the cells of the ethmoid bone, though occasionally to the superior turbinated bone. A woman in this hospital some years ago, having symptoms indicating polypus in its early stage, died of another complaint, and after death, the cells of the ethmoid bone were found distended by a substance similar to polypus. The indications in the early stage that polypus exists, or is occurring, are merely an unnatural secretion of mucus; a great desire to blow the nose, such as may arise from common catarrh; but in catarrh the secretion lasts for a shorter period, whilst the discharge from polypus does not subside, on which account you may suspect incipient polypus. When bone, for instance, is affected, you have pain in the forehead, but there is none in polypus. The smell is affected, the patient fancying, perhaps, that he smells odours which do not exist; or the sense of smell may disappear, which is more common; the taste at the same time is injured, if not destroyed. These symptoms increase as the polypus gets larger, with obstruction of the middle meatus of the nose, and then of the inferior meatus. Respiration through the nose is imperfect, and at last the patient breathes only through the mouth; this is troublesome, especially at night, because the using the jaw in the day acts on the salivary glands; but at night

the open mouth is always dry, and the tongue becomes hard, like a board. At first there is no difficulty of blowing the nose, though afterwards there is, and the mucus is blown down the pharynx. These symptoms may, in their progress, occupy a year, or many years. If neglected, the polypus grows larger, in becoming more solid, and the base almost cartilaginous; sometimes it is large enough to hang down outside. It varies with the weather, swelling in a moist atmosphere; it is, in fact, an hygrometer to the patient, having a smooth surface and an opal, semi-transparent appearance. It may project, backwards, into the pharynx behind the soft palate, and then it may occasion giddiness, from pressure on the internal jugular vein, though persons generally procure surgical assistance before the case is so far advanced. But sometimes the disease is neglected, and I remember a man in this hospital who had had a polypus removed, but which renewed, and when he came was enormous, projecting from the nostril under the skin of the face. The patient died of cerebral symptoms, and after death there was found effusion in the ventricles of the brain, from the pressure of the polypus. I have seen, also, a boy, sixteen years of age, having a polypus of an enormous size, not less than my fist, hanging down at the back of the pharynx, which could be felt in the mouth, and which pushed out the *ossa nasi*, giving him a nose broad enough to cover half his face. I lately saw polypus cause absorption of the *os unguis*; it extended into the orbit. It was removed, and, I believe, successfully.

In the early stage, the existence of polypus is doubtful, if you cannot see it; but, by and by, you can discern it by dilating the nostrils with the forceps, near the window, and the more easily if the sun shines. If large, you can tell how far it extends; if it extend into the pharynx, by putting your finger into the mouth; if it extend to the brain you may tell that by the cerebral symptoms. Then, how are you to get rid of it since it is not under the influence of medicines, being quite local? After it has been removed, I have used local remedies to prevent its return, but medicines are only useful after removal; therefore straightway remove it. In common polypus, ligature is impracticable; and those who propose it can never have had any thing to do with the disease. It is impossible also to remove it by the knife, as you cannot see it, and when touched with a sharp instrument the blood directly flows so as to prevent your continuing the operation. Neither with the scissors can you see your way sufficiently. The best way of operating is with a proper pair of forceps, if you know how to use them. The proper forceps will pull away its neck. The *whole* of the opposite surface ought to be quite rough; convex above, concave below, opening laterally, so that it may hold the polypus tight. They should be pretty strong, and not slender, unless for small nostrils. If made with a screw in the handle, having a double worm, when the polypus is grasped, by proper manœuvring and screwing it tight, there is no danger of its slipping off. The procedure may be longer, but it is more certain. In a few cases you will want such forceps as these, which open from above downwards, but they are not often required. Any forceps should be oiled



and warmed, the patient in a chair with his chin elevated; get hold of the polypus near the base, by introducing the forceps upwards to the back of the nostril; place one blade on each side, tighten the forceps with the screw, and then—not merely pull it out at once, or the polypus will break off—but twist a little to each side, gently draw forwards, push backwards, twist it again and again, a few times, and then draw out the forceps with some force, and the polypus will come away entire. There may be several others, and if so, repeat the operation. The patient should blow his nose, so as to bring them all into view; if he cannot do so, you must endeavour to remove them without seeing them. There may be, also, a small one jammed in by the larger, which is to be seen on removing the latter. Having done all this, the relief to the patient is immediate.

In some cases one operation is sufficient; in others, two, or even three, are necessary. Be gentle in using the forceps; rough usage might impair the ethmoid bone, or even the cribriform plate. I never saw any inflammation result from the operation, or cerebral symptoms, or erysipelas. In one case hemorrhage followed, which I easily stopped by plugging the nostril with lint. Mucous membranes bear injury more readily than the skin, as in the case of internal piles.

In very old, firm, and cartilaginous polypi, there is great adhesion to the bone; but it is of no consequence if you remove a small plate of the bone with it, for at least that shows that the whole polypus has come away. In these cases I use a peculiar forceps, resembling those employed by ladies for cutting flowers, so constructed as to cut at the upper part, having a rough surface below, to hold the polypus. These shave off the polypus as near the bone as possible.

I will conclude my remarks on the extermination of common polypi from the nose by adding that in some cases you may know from what occurs at the operation, that there is a tolerable chance of the tumour not returning. In making this observation I allude to an occurrence that I met with to-day (Wednesday, Nov. 14th). A gentleman came to me with a polypus. There was only one that I could discover. In removing it, a portion of the cells of the ethmoid bone was taken away. There is no harm whatever in a part of the ethmoid bone being thus extracted; I never saw any ill consequences arising from it, and you may suppose, from the polypus being thus completely removed, that there is less chance of its return than there otherwise would be. Another polypus may arise from other parts of the mucous membrane, but certainly not from this.

Now, the polypus being removed, the patient will immediately experience very great comfort—great relief will follow the operation. But he will naturally inquire whether it will return, and you must answer that most likely it will, and that if it do he must again have it removed. But then he will probably put another question. Can you do any thing to prevent its recurrence, or to make its growth slow? I believe that you may retard its return in many cases, or even prevent it. About eighteen years since, a gentleman came to me with polypus of the nose. He had many times had polypi removed by a surgeon in the country; but he now came to London

and applied to me. I removed the polypus, and recommended him to employ what I had before found useful, namely, white precipitate ointment. It should be softened by holding it before the fire, and then, with a camel's-hair brush, you must paint the upper part of the nostril from whence the polypus seems to have originated. This must be done every day. It is a very mild application, and does not irritate. This gentleman very steadily persevered with the plan; he often came to me for other little complaints, thus I had an opportunity of watching the case, and the polypus did not return for fifteen or sixteen years, when I again removed it. I have seen other cases in which very great good appeared to arise from this local application, after the removal of polypi. Sometimes I have employed the ung. hydrarg. nitratis diluted, but I have more frequently used the white precipitate, and I prefer the latter. On the whole I think it is quite as effectual, and does not inflame the nostril, or cause sneezing, or plague the patient so much as the former. Its use, however, must be persevered in steadily,—not for a few days, a few weeks, or a few months, but even for years. The patient must learn to apply it carefully for himself, or get some one to apply it well for him. If the brush be merely introduced a little way into the nostril it can do no good. You must explain to him the direction which the passage of the nostril takes, and show him how to pass it up to the middle meatus, directing the instrument first a little upwards and backwards, and then directly backwards into the throat; and, indeed, the brush ought to be carried back as far as the pharynx, so that you may sweep, as it were, the whole roof of the nostril. You may use astringent lotions, which I have no doubt are sometimes attended with advantage, such as a solution of sulphate of zinc, or a solution of alum. Dissolve half a drachm of sulphate of zinc in eight ounces of rose-water, with a drachm of tincture of galls, and let the patient inject this with a syringe into the nostrils every day. This may more especially be employed where the nostril is narrow, and a camel's-hair brush of sufficient size cannot be made to enter it.

I have sometimes applied the nitrate of silver to the roof of the nostril from which the polypus grows. This must be used carefully, not because of any real harm that it will do, but if it be applied too extensively it will produce inflammation of the nostril. The upper lip, from the margin of the nostril, must be protected by smearing the parts with olive oil, otherwise the nitrate of silver will flow down upon them, and then, some time afterwards, when the patient has been exposed to the light, he will find a great black stain on his face.

A polypus occurs in the nostril of a different structure from that which I described in the last lecture—a fleshy polypus, apparently composed of firm, solid fibrin, with a very thin membrane over it. It is apparently of the same structure as the polypus that grows from the uterus, and sometimes from the rectum. I am inclined to believe that sometimes the common polypus alters its structure, and becomes a fleshy polypus; but certainly that is not generally the case. I think, however, it does occur in some instances; I know that in other cases a polypus is fleshy from the beginning.



These fleshy polypi have generally a narrow neck, as is the case with polypus of the uterus, and that which grows from the inner surface of the rectum. The polypus does not appear to me to be restricted to any part of the nostril, to the cells of the ethmoid bone, or the superior turbinated bone. I saw one of these polypi on the septum nasi, quite within sight. It was an inch in length and three inches in diameter, and attached to the surface of the septum nasi by a narrow neck. I introduced, not a pair of forceps, but probe-pointed scissors, slightly curved, and snipped off the polypus close to the septum. I applied nitrate of silver to its root, and when I saw the patient a considerable time afterwards, there was no reproduction of the polypus. In like manner the fleshy polypus of the uterus does not grow again after it has been removed by ligature. I had also a case under my care in which a fleshy polypus was attached by a narrow neck to the Schneiderian membrane in the lower part of the nostril, and quite within sight. I removed it in the same manner, but I cannot say whether it returned or not. Here (presenting it) is a fleshy polypus, which I removed by ligature; it hung down the posterior nares into the pharynx. In like manner to this the polypus of the uterus separates with the ligature attached to it. It is a remarkable circumstance that though, when you tie a polypus of the uterus, the ligature be placed below the origin, yet, when it comes away, the neck situated above the part to which the ligature was applied, has exfoliated along with the rest. Here is a polypus of the uterus (exhibiting it) in the act of separation under the application of a ligature. When I was assistant-surgeon here, a young man, a soldier, came to this hospital. There was considerable difficulty in both his respiration and deglutition, but there was nothing to be seen in the nose. On looking, however, into the throat, I saw, on the back part, an enormous tumour projecting the velum pendulum palati forward to the mouth. The tumour hung down further than the eye could follow it, but with the finger I could just reach its lower margin. On a careful examination it was found to be a great fleshy polypus attached to and descending from the posterior part of the nostril. It had been growing for many years. I removed this by ligature. I never saw or heard any thing of the patient afterwards; but as the operation was perfectly successful, and he was very soon well, I think that in the common course of things he would have come back if the disease had returned.

I have said that this polypus was removed by ligature. Now, it is much easier to *talk* of removing polypi in this way than to *do* it; for when they hang from the nostrils into the pharynx it is difficult to accomplish it. There have been many very ingenious contrivances for removing polypi in this situation by ligature, but according to my experience they are more ingenious than useful. You may apply a ligature to a polypus of the nostrils by a very simple apparatus much better than by any thing complicated. It is rather difficult to explain the method of applying a ligature when the tumour hangs into the pharynx, and yet those are the cases in which it is necessary to have recourse to this means for the removal of the polypus. When the

tumour is situated in the nostrils, it may be snipped off with a pair of scissors, or extracted by means of forceps. There is no difficulty in tying a ligature when you know how to do it, but, as I have said, it is difficult to describe the mode. I will, however, endeavour to make myself intelligible.

One method of tying a fleshy polypus that projects from the nostrils into the pharynx is this:—Pass a bougie into that nostril from which, judging by the exploration of the finger, you suppose the polypus to arise. It may have its origin from the septum between the two nostrils, and in that case you may pass it into either nostril, but generally by introducing the finger into the pharynx and turning it upwards, you will discover that the tumour arises from one or the other nostril. The bougie is to be passed through that nostril into the pharynx; the other finger must then be introduced into the pharynx, the bougie bent, and one end brought out at the mouth. Thus, one end of the bougie projects from the nose, and the other from the mouth. You fasten a double ligature to the end of the bougie that projects from the mouth, and the loop hangs down. You draw the bougie out at the nose; the ligature, of course, follows it; you cut it off from the bougie, and then the two cut ends hang out of the anterior nostril over the upper lip, the loop at the opposite end hanging out of the mouth. The ligature should be strong and well waxed, so as to make it stiff. It should also be very long, or you will find the operation difficult: it is easy to cut it shorter. The next step of the operation is to get the ligature over the tumour. For this purpose you cut through the loop hanging from the mouth, so that there are now two single ligatures. One end of the single ligature is to be passed through a silver tube, and putting the tube into the mouth and pharynx, you carry one end of the ligature under the base of the tumour on one side of it. You leave that out of the mouth, and your assistant holds both ends of the ligature to prevent it from slipping; then with the same silver tube, you are to take hold of the other loose ligature at the mouth, and carry that on the other side of the polypus, and there your assistant is to hold it. A knot that will not slip must then be made of the two ends of the ligature that hang from the mouth. You have a ligature now on each side of the polypus, and then, by carefully drawing the ligatures out at the end of the nose, you have got hold of the polypus at its base. A silver tube is then to be introduced into the nostril, and you tighten the ligature upon the shoulders of the tube in the same manner that you are taught in the lectures on midwifery to tighten a ligature on polypus of the uterus. It must be tightened every day till you have completely cut through the polypus. But if this were all, when the polypus was loose it would drop into the pharynx; that would be of no consequence if it were a small one, but if it were large it might choke the patient. To obviate this, after the ligature has been applied, pass a needle, with a strong ligature, through the polypus, and let the ligature hang out of the mouth, so that when the polypus is loose the patient may draw it out at the mouth. It was in this manner that I tied the very large polypus that I mentioned a few minutes since.



But there is another method that is still more convenient than this, and which I have employed on other occasions. It was the method adopted by Dessault. You require a silver tube by which the ligature is to be directed into the mouth, a shorter silver tube to be introduced into the nostril for tightening the ligature, and two pretty long ligatures. You introduce a bougie into the nostril and bring out one end at the mouth. To this you fasten a single and a double ligature; the single one must be very long. That being done, the bougie is to be drawn out at the nose, and, of course, the ligatures follow it. You then cut off the bougie, and you have the two ends of the double ligature hanging out of the nose, and the loop hanging out of the mouth; one end of the single ligature also hangs out of the nose, and one end out of the mouth. The single and the double ligature always pass on one side of the polypus; but by means of a silver canula you draw the single ligature to the other side of the polypus. The ligature being held in its place by an assistant, the end of the single ligature, projecting from the mouth, is passed through the loop of the double ligature, and the ends of the double ligature being drawn out of the nose, the single end follows, and you make a ligature which you fasten by means of a canula introduced into the nose. This method is easier in practice than the one I mentioned before, though it is more difficult to describe. (The lecturer illustrated the foregoing modes of tying the ligatures on a paper model held by an assistant.)

## MALIGNANT TUMOURS IN THE NOSE.

There are tumours which grow in the nostrils, and are sometimes confounded with polypi, but which are of a malignant character. There is an example of one on the table. A boy was admitted into the hospital with this tumour, I think, in the left nostril, which caused considerable bulging of the ala nasi. On looking into the nostril I saw a tumour of a brownish-red colour, elastic to the touch. It had not the appearance of a common polypus. It seemed to have a narrow attachment outside of the superior maxillary bone, but no attachment to the nostril elsewhere, for a probe could be passed around it. It was doubtful whether it proceeded from the antrum or not; for at that time there was no apparent enlargement of the antrum. It was evidently too firm to be removed by ligature or forceps in the usual manner. I divided the ala nasi, and carried the incision through the upper lip. This exposed the cavity of the nostril, and then, having discovered the base of the tumour, I cut it through, removing it as close to the bone as I could. To that part from which the tumour was removed, when the bleeding had ceased, I applied lint spread with chloride of zinc and flour, in order to make a slough of the part from which the tumour had arisen. The wound made in the upper lip soon healed, as these wounds do, by the first intention. For some time there was no appearance of the recurrence of the disease, and about three months after the operation the boy left the hospital. He returned, however, about a month afterwards, there being then a great

deal of discharge from the nose, evident disease going on in the nostril, and a swollen belly. I did not then see him, for he was admitted, for the second time, just after I had resigned my office here. Paralysis of the lower limbs came on, and the boy died. On a post-mortem examination it was found that the disease had returned in the nostril, the tumour had destroyed, in a great measure, the ethmoid and sphenoid bones, and was seen lifting up the dura mater near a part of the ethmoid bone. It had also destroyed some of the bones of the face, and filled the cavity of the maxillary antrum. The same disease existed in other parts of the body. There was a tumour of the same kind attached to the xiphoid cartilage; others were connected with the vertebræ and ribs, and the bodies of the vertebræ were altered. There was a deposit of substance, similar to that removed from the face, between the vertebræ and dura mater of the spinal canal, pressing on the spinal cord, and accounting for the paralysis of the lower limbs. There was likewise some effusion into the ventricles of the brain. This was evidently a malignant tumour, which might have been mistaken for a polypus, although the appearance was so different from the common polypus that on removal of the growth the disease was readily distinguishable.

I have seen several cases of malignant tumour growing from the Schneiderian membrane. In some cases there is reason to believe that the disease begins between the periosteum and the bone; but I have no doubt that malignant tumours do sometimes grow from that membrane. A young gentleman was brought to me bleeding profusely from the nose. He was of strumous complexion, and one of that class of persons who are liable to a vascular condition of the mucous membrane of the nose. It was of a much more than usually bright scarlet colour, and, indeed, looked like scarlet velvet. The least injury to it would make it bleed, not merely a little, but to many ounces; and there was quite an alarming hemorrhage from a mere scratch with the sharp end of a probe. By and by he came to me with a sort of fungus growing from the diseased membrane over the inferior turbinated bone. This fungus was quite distinct, it was not larger than the end of the little finger, and was attached by a narrow neck. I snipped it off with a pair of scissors, but there was such a rush of blood that I could not tell whether I had removed the whole or not. The fungus returned; I suppose it was not entirely removed, and it grew rapidly. In a short space of time it filled up the entire nostril, and extended back to the pharynx, where it could be felt with the finger projecting the soft parts into the mouth. Mr. Keate saw the patient with me; we examined the tumour very carefully, and hoped that we might be able to remove it by ligature, or, at least, to remove a part. It was tied, but it proved to have so broad a base that the little-piece removed did no good whatever. The fungus grew in spite of every thing that could be done; it caused caries of the bones of the nose, destroyed the orbit of the eye, projected through the cheek, and ultimately the poor fellow died.

I saw another case of the same kind. The fungous tumour having originated in the Schneiderian membrane, occupied a great part of



the nostril, and then projected through the back of the pharynx. Sir Astley Cooper and myself attended the patient, and we agreed that it was better to remove that portion which protruded through the pharynx by ligature. I applied it in the way I have endeavoured to explain, with perfect ease. I took hold of the tumour with the ligature upon it, and in the course of a few days the ligature came away. Though a very large part of the fungus had been included in the ligature, it became so small and shriveled that it was hardly observable, just as is the case with what Dr. Clark calls cauliflower excrescence of the uterus. When that has been tied for some time, and the ligature comes away, the tumour being composed almost entirely of vessels, it vanishes; so it was here. The pharynx was cleared by the operation, but the tumour grew in spite of all that could be done, and we recommended the father, as we could do him no more service, to take his son away. I did not hear the result of the case, but I have no doubt that the patient died shortly afterwards.

From my experience of these malignant tumours, I should say—Let them alone. I never saw any ultimate good arise from any measures that were adopted for their removal; and, indeed, for the most part, malignant tumours in the nostril have so broad a base that any operation for their removal is out of the question.

---

## LECTURE XVI.

### ON DISEASES WHICH ARE SOMETIMES MISTAKEN FOR POLYPI OF THE NOSE.

I HAVE a few words to say concerning these diseases. The case that I shall first mention is a very common one. A young person, frequently a child, is brought having dilated pupils, a fair complexion and thin skin, with some difficulty of breathing through the nostrils, and perhaps rather more secretion from them than usual. On looking into the nostrils the Schneiderian membrane appears very turgid, more vascular than ordinary, and on the outside there is a tumour, an excrescence, sometimes small, at other times pretty large. This may be mistaken for a polypus, and, indeed, the disease puzzled me when I first saw it. This appearance, however, is produced merely by the thickening of the mucous membrane of the nostril at the anterior extremity of the inferior turbinated bone. I do not believe that the mucous membrane there is really more thickened than it is anywhere else; but it is more apparent in that situation on account of the projection of the bone.

In some cases in which the mucous membrane has been sufficiently thickened to obstruct the respiration through the nostril, I have introduced a pair of probe-pointed scissors, slightly curved, and snipped off a portion of the projecting mucous membrane. There is no harm

whatever in its excision; and where the nostril is much obstructed, the operation affords great relief. You may suppose this to be a very simple operation; and so it is, for it can be done in an instant, but yet it requires some care in order that it may be done properly. In the dead body you might snip off a bit, and if you had not completed it by one incision you could make another. But in the living subject the mucous membrane is full of vessels, and the part must be snipped off at once; for the moment one division is made with the scissors, the hemorrhage is so great that you cannot see a bit of the remaining part which requires to be divided. It is only every now and then that you find it necessary to have recourse to this operation. In other cases give the child small doses of steel for three weeks, then suspend its exhibition for a fortnight, and again resume it,—and proceed in this manner for three or four years. Delicate children who are liable to this disease of the Schneiderian membrane are always benefited by the exhibition of steel; it should, however, be given not in large doses for a short time, but in small ones long continued. Where the constitution is weak, you may sometimes cure the disease in three weeks, but the rectifying of the constitution is a work of years. Some good may be done by local treatment. Dissolve two grains of sulphate of zinc in an ounce of rose-water, and inject a portion into the nostrils two or three times a day; or paint the inside of the nostril with diluted ung. hydrarg. nitratis by means of a camel-hair brush.

I have seen some cases in which a small abscess has formed in the tumour that I have just described. Suppuration has taken place in the substance of the Schneiderian membrane just where it projects in front of the inferior turbinated bone, and the best plan to adopt is to cut off, with a pair of scissors, membrane and abscess altogether. When an abscess forms in a pile, that is best relieved, not by laying open the abscess, but by snipping off the pile.

Another disease, sometimes mistaken for polypus of the nose, is connected with a morbid condition of the ethmoid bone. A patient has difficulty of breathing through the nose, with pain in the forehead, and blows his nose oftener than natural; by and by he blows away hard dry scabs of mucus, like bits of glue, and then there is an offensive putrid smell perceptible to others, and probably to himself also. This indicates disease in the bones of the nose, generally of the ethmoid cells, but sometimes more extensive. Occasionally it is supposed to supervene on syphilis, sometimes it arises from the long-continued use of mercury; sometimes from a scrofulous state of the system; or it may be the result of general bad habit, such as is called *cachexia*. I am not about to enter into the history of this disease at present, but merely to point out that it may be mistaken for polypus. The symptoms always show that it is not a polypus, and if you turn the patient to the light you will see a tumour at the upper part of the nostril. This consists merely of unhealthy granulations, organized lymph covering the Schneiderian membrane over the bone; and if you take hold of it with the forceps you do not pull away a polypus, but a bit of the Schneiderian membrane with the tumour over it. Take care



not to mistake this case for polypus, because the treatment that is applicable to the one is quite inapplicable to the other.

Having finished this subject, I propose to call your attention to

## DISEASES OF THE TONGUE.

I am inclined to direct your attention to this subject, first, because you will find, especially in private practice, that you are frequently consulted about diseases of this organ; and, secondly, there is nothing worthy of notice about it in books. I have at different times looked over various books on surgery, and over the journals and surgical reviews, but I have not been able to gain any information about diseases of the tongue, except those of a malignant character; and I must add that the history given, even of these, odd as it may seem, is very different from what I have met with in practice.

In dyspeptic persons the tongue is frequently rather swollen; it becomes cracked on the surface, and may remain so without harm for years. It may bear the appearance of fissures on the surface, and the papillæ may be enlarged. This dyspeptic tongue, existing in a slight degree, is very common. A similar appearance of this organ occurs in persons who have been much under the influence of mercury. When a patient is salivated, the gums become inflamed, and the tongue also becomes inflamed and swollen. In bad cases of salivation, such as you scarcely ever see in the present day, because mercury is more prudently exhibited than formerly, the tongue becomes so swollen that the mouth will not contain it, and this inflammatory state of the organ, arising from the use of mercury, is very apt more or less to persist afterwards. The tongue is swollen; there are fissures on the surface, and this appearance is retained to the last. Sometimes you will see a longitudinal fissure in the median line of the tongue which does not seem to swell up like the rest of the organ. I remember a patient who had thus suffered from the use of mercury, and for a long time afterwards his tongue was much enlarged. The longitudinal fissure was so deep that it looked as if the tongue were divided into two parts, and the patient consulted a medical practitioner who, not being acquainted with the disease, thought the tongue was going to drop into two pieces, and proposed to fasten it together by a ligature.

This morbid condition of the tongue requires no special treatment. If the patient be dyspeptic, try to put his digestion in as good a state as possible. When he suffers from the use of mercury give him sarsaparilla, nitric acid, or whatever else may get rid of the effects of the mercury.

There are ulcers of the tongue which are different from those I have just mentioned; sometimes they accompany an enlarged and fissured tongue, but they may exist independently of those circumstances. The ulcers to which I now allude more especially occur as one of the sequelæ of syphilis. They are sometimes accompanied by the eruptions, little spots of syphilitic psoriasis on the body, and little

spots on the scalp, but frequently they occur without symptoms elsewhere. A gentleman whom I saw not long since had a chancre in the spring of the year, some few years ago. Two or three months after that, if I remember aright, he had secondary symptoms. He took mercury, but inadequately; and many months afterwards the secondary symptoms returned; they were, however, but slight, and yielded to some simple treatment. But a year and a half after the first attack of syphilis, there were ulcers of the tongue, so that he could hardly speak or swallow his food; and at the same time spots appeared on his head and elsewhere. He took a little mercury, his tongue got well, and the eruption disappeared. From that time, however, he was subject continually to little ulcers of the tongue, coming but not going of themselves, never disappearing till he had taken blue pill. The ulcers, of which there were several, were very troublesome, interfering with deglutition, nay, even making him speak thick, and occasioning him great distress. Of his own accord he took a little mercury when they appeared, and they went away; but in two or three months they were sure to return. At last I made him take a course of gray powder (hyd. c. creta) for nearly two months; the ulcers healed, and never troubled him again. These cases are very common as a sequel of syphilis, and the ulcers are seldom cured, except by mercury; but, according to my experience, large doses of it do harm rather than good. Calomel and opium is the great medicine to be brought into play in these cases. The mercury with chalk, five grains, with one or two grains of Dover's powder (to prevent it from griping and purging), is preferable to any larger doses of the remedy. The length of time during which a person may be plagued with ulcers of the tongue is astonishing. I have seen them last for years, until a patient has been put through a pretty long course of small doses of mercury. I saw one gentleman in whom these ulcers followed syphilis, and had been going on for two or three years when he came to me. They yielded to the gray powder, but not very rapidly, and the tongue always continued disfigured and covered with cicatrices. In some cases the patient is relieved by taking sarsaparilla, especially an infusion in lime-water. Where mercury has failed, I have found that the best remedy is iodide of potassium, two or three grains, given twice daily, dissolved in plenty of water; but, in three cases out of four, the gray powder is much more efficacious.

Ulcers of the tongue, such as I have described, sometimes occur merely as accompaniments of dyspepsia, and they generally heal of themselves; but if they do not, one application of the nitrate of silver is generally sufficient to remove them. Those, however, that follow syphilis, do not yield to this remedy; nor does any local application, so far as I have seen, do much service.

Some persons who have ulcers on the tongue, have them also on the inside of the cheek. I suspect that they are originally little eruptions, but as they occur in a mucous membrane they ulcerate more rapidly than they would if they occurred on the skin.

There is a disease of the tongue which I have seen every now and



then, and which I am sure is very often mistaken for cancer, though it is of a different nature. It is a curable disease, although it looks like a malignant one in many respects. The first thing of which the patient complains is enlargement of the tongue, with some pain. On examination you find a tumour in one part of it, not very well defined, not with any distinct margin. It is a softish tumour, and increases in size; and perhaps another tumour appears in a different part of the tongue, and that increases also. There may be three or four of these soft elastic tumours, with no very defined margins, in various parts of the tongue. This is the first stage of the disease.

In the second stage there is a small formation of matter in one of these tumours,—a little abscess, which breaks externally, discharging two or three drops of pus. When the abscess has burst, it does not heal, but another forms in one of the other tumours. These abscesses may assume the form of ulcers, and the ulcer has a particular appearance. In the first instance it is a very narrow streak of ulceration, but on introducing a probe you find that the ulcer is the external orifice to a sort of fissure in the tongue. The probe passes in obliquely; the tongue is, as it were, undermined by the ulcer, a flap of the substance of the tongue being over it.

The disease now becomes more painful, and at last these ulcers may spread externally. In some instances they occupy a very considerable portion of the surface of the tongue, but generally they burrow internally, and do not spread much towards the surface. This is a very distressing state of things, and a man may remain in this state for a long time. The glands of the neck do not become affected, nor does the general health suffer, except from the difficulty of swallowing food. This is one inconvenience experienced by the patient, and he also labours under a difficulty of articulation. The tongue, from its enlarged state, may become stiff, not sufficiently pliable for the purposes of speech, and the patient either speaks thick or lisps.

In some instances the disease may be relieved by a course of sarsaparilla, with small doses of bichloride of mercury. A strong decoction of sarsaparilla, with from a quarter to half a grain of bichloride of mercury, may be taken in the course of the day. Of course, if there be any thing wrong in the general health, you should endeavour to get that corrected, and attend especially to the state of the bowels and the secretion of the liver. If the secretions of the digestive organs be unhealthy, a dose of senna and salts may be given every other morning, and blue pill every other night. When the patient is brought into this state, one remedy, as I have said, is sarsaparilla with bichloride of mercury, but, according to my experience, this is not the best remedy. The remedy best adapted for these cases is a solution of arsenic. Give the patient five minims three times daily, in a draught, gradually increasing the dose to ten minims. It should be taken in full doses, so that it may begin to produce some of its poisonous effects on the system. When it begins to act as a poison it will show itself in various ways. Sometimes there is a sense of heat, a burning pain in the rectum; sometimes griping, purging and sickness, and nervous tremblings. A patient who is taking arsenic, especially in pretty

large doses, ought to be very carefully watched. At first you may see him every two or three days, and then every day; and as soon as the arsenic begins to operate as a poison, leave it off. When this effect is produced, the disease of the tongue generally gets well, but at any rate leave off the arsenic, and the poisoning will not go too far; it will do no harm. If, after a time, you find that the disease is relieved, but not entirely cured, you may try another course of arsenic. Perhaps it may take a considerable time to get the tongue quite well. Sarsaparilla, with the bichloride of mercury, may be given at one time; and at another, arsenic. You cannot give either of these remedies for ever, and indeed the arsenic can only be given for a very limited period; but it is astonishing what bad tongues of this description I have seen get well under these modes of treatment, especially under the use of arsenic.

Malignant diseases of the tongue generally are of the nature of carcinoma, but sometimes of fungus hæmatodes.

Carcinoma generally begins with scirrhus tubercles in the tongue, which may be felt externally; but, from the dissections I have made, I suspect that the disease never begins in one part only—that while there is one tubercle that can be felt, there are others that cannot in various parts of the organ. The scirrhus tubercle increases, becomes attached to the skin, and ulcerates. It may commence in any part of the tongue; sometimes the upper part, sometimes the end, and sometimes the lower surface.

Such is the history of the disease as it is commonly given in books, and as it frequently occurs in practice; but I must say that it does not always begin in this manner; and that in many cases a disease which you do not think of any consequence turns out to be malignant. For example; a gentleman came to me with a little round ulcer, not so large as a silver penny, and it gave him no pain. I touched it with the nitrate of silver, and used some other remedies, which I now forget, for it was many years ago. I proposed to remove a part of the tongue by ligature, but he did not like to undergo the operation, and went into the country. I saw nothing of him for three-quarters of a year, and he then came back with an immense ulcer of the tongue. The tongue was much enlarged, and also the glands of the neck. He died, and I made a post-mortem examination. I found an enormous tumour, fungus hæmatodes of the tongue, extending to the epiglottis and the glands of the neck. The only external manifestation of this, in the first instance, was a little ulcer, without surrounding hardness, and which yielded to the touch. I have seen fungus hæmatodes of the glans penis begin in the same manner; it would not heal, and by and by the tumour burst out. A gentleman consulted me about two years ago with some little excrescences on one side of the tongue, which looked so very like warts, that I thought they were so; and I apprehended the disease was malignant, especially as it appeared to be confined to the surface. I am always suspicious of diseases of the tongue. I applied some caustic potassa to the warts, which destroyed them very effectually, and made a deep ulcer there. The part healed, and the patient



seemed to be very well. He came to me some time afterwards with ulcers where the warts had been; there was a great deal of hardness at the base, and they had all the characteristics of carcinomatous ulcers. So they proved to be; the disease continued to spread, there was repeated hemorrhage, and the patient died. In other cases I have seen disease of the tongue, which did not present a suspicious character at first, prove to be malignant in the end.

There are on the table specimens of malignant disease of the tongue, illustrating the progress which I am now going to describe. The ulcer extends, eats away a good bit of the tongue, generally on one side; the organ becomes stiff, gets fixed to the neighbouring parts; deglutition and articulation become difficult; the patient complains of pain, and you cannot help him. The ulceration goes on; the constitution suffers from the influence of malignant disease, and also from the want of nourishment; the glands in the neck become affected; and I do not know any thing more miserable than a patient dying of malignant ulcer of the tongue. Having described the progress of the disease so far, you can easily conceive the rest. The patient is gradually rendered weaker and weaker, thinner and thinner; then there is great bleeding; the lingual arteries are ulcerated, and it may be that the patient dies of hemorrhage, for you can do nothing to stop it except by the actual cautery, and that you are often not in time to apply. The repeated hemorrhages in these cases generally go a great way towards the destruction of the patient.

In the advanced stage of the disease nothing can be done. Can any thing be done in the early stage? Can you remove the scirrhus disease in any way? If it be situated at the anterior part of the tongue you may excise it. An assistant could hold the tongue with a rough towel on one side while you excise the other, and he could also hold it while you secured the bleeding vessels by ligature. But a much simpler way would be to remove the part by ligature. A strong ligature, with a double needle, may be passed through the tongue, and it may include as much as you please. If there be a large portion to be removed, make a notch with a pair of scissors behind and before; into which the ligature can drop so as to enable you to effect the strangulation more completely. It gives a great deal of pain at the time you apply the ligature, but you must have a very strong ligature, and tie it as tight as possible. The part introduced between the ligature is immediately killed; it assumes a purple and then an ash colour, and in the course of a few hours the pain is over; but profuse salivation follows, and in some cases lasts two or three days.

There is no great difficulty in removing, either by the knife or by ligature, any tumour from the tongue, except it be situated just at the back; but then I must tell you that I never saw any permanent good arise from it in any one instance. In the examinations I have made where there was carcinoma of the tongue, the scirrhus disease was beginning in other parts. A woman has a scirrhus tumour of the breast,—do you think that you would succeed in curing the disease by cutting away a portion of the breast and leaving the rest?

You have no chance of the operation succeeding except you remove the whole, unless the scirrhus tumour be distinct with a cyst around it, and have no connection with the breast. If there be fungus hæmatodes of the tibia, no surgeon of sense would think of performing amputation, except above the knee, even if he did it there. In order that an operation for malignant disease may be successful, you must remove the whole of the organ in which it is situated, otherwise there is no chance of permanent good. In the case of malignant disease of the tongue, you cannot remove the whole, but only that little bit in which it has shown itself, while there is an under-current of disease going on every where else. I therefore cannot recommend you to perform the operation, and I think it is better to let a disease like this take its course than to subject the patient to the pain of an operation, and, what is worse, to the disappointment. The patient goes through the operation, and then in a little while he is disappointed to find that he is just as bad as ever.

I cannot say that those small ulcers of the tongue which I described before, never run into malignant disease. I suspect that any ulcer there that has existed for an indefinite time may assume the character of malignant disease. A patient had ulcers of the tongue and cheek; he was apparently dyspeptic, and, so far as I know, they were not connected with syphilis. He had been subject to them for years, and they generally yielded to some remedies; but at last I was called in to see one of the ulcers, unusually intractable, in the cheek. It had become malignant, and the patient died of carcinoma of the cheek. Where there are ulcers of the tongue, take care that there are no external causes of irritation acting upon them to keep them up; for this will sometimes convert a simple into a malignant ulcer. Teeth, scarifying ulcers in the tongue, should be extracted. In many cases rough, ragged teeth produce disease of the tongue. In malignant disease I have over and over again had the teeth taken out, while the event has proved that they might as well have remained; but still, when there is a sharp tooth cutting against the edge of the tongue, you are always to look at it with great suspicion.

There is one other disease of the tongue, or rather a disease under it, which remains to be mentioned. A patient comes with a sore mouth, and you see the tongue pushed up to the soft palate. It looks as if the tongue were enlarged, but that is not the case, it is lifted up. You tell the patient to put his tongue against the incisor teeth, and on looking beneath you see a tumour. By feeling it you find fluctuation; you puncture it, and let out a quantity of transparent fluid, sometimes a teaspoonful or more. The fluid is a little glutinous, and consists of saliva. There has been an obstruction to the orifice of the submaxillary gland; the saliva has been secreted by the gland, but could not get out by the duct, and hence it has remained till it has formed a large tumour. This is what is called ranula.

You puncture the tumour with a lancet; the fluid comes out, and immediately the patient is well. You see him a week afterwards; he is quite well, and there is the saliva flowing out of the orifice you have made with the lancet. But you see him a month afterwards,



and the tumour has re-appeared, the orifice has healed, and the tumour becomes as large as ever. All you want is, to get a permanent orifice from the bag into which the duct has been converted; but that is a very difficult matter. I have tried to effect it in various ways. I have punctured the bag, and then touched the edge with caustic potassa to prevent its healing. The patient has gone on very well so long as it did not heal, but as soon as I have left off applying the caustic the orifice has closed. I have introduced a tenaculum into the bag of the ranula, and cut away a piece sufficiently large to admit the finger; the patient has then continued well for a longer time, because the part takes longer to heal, but contraction takes place, and the patient is bad again. I have run a seton through, and the patient has then gone on well for a considerable time. I have introduced a gold or silver ring, and kept that in as a seton. If the seton be kept in a considerable time it seems to effect a permanent cure, but even that fails, and you have to perform the operation two or three times. I know of nothing better than the use of a seton, and I believe that it is better made of metallic substance than of silk. It does not so soon ulcerate its way out, and if it remain in for a long time the edges of the orifice through which the seton is introduced may become covered with mucous membrane. If you introduce a silk or India-rubber seton in the back of the neck, after a great length of time a sort of skin forms on the inner surface of the canal; there is a discharge of matter; and when you take away the seton, the part in which it lay remains pervious. So if you keep a seton in a ranula for a very long time, the opening may remain pervious. The advantage of a metallic over a silk seton is, that it does not ulcerate its way out so soon, does not get putrid in the mouth, and therefore may be kept in for a longer time.

---

## LECTURE XVII.

### NON-MALIGNANT TUMOURS OF THE TONGUE.—PARALYSIS, ITS CAUSES, AND THE DIFFERENT FORMS OF IT.

IN my last lecture I spoke of diseases of the tongue. I should have mentioned that other kinds of tumours than those I there described occur in that organ, just as they do in other parts of the body. Their formation in the tongue is not a frequent occurrence; nevertheless, you meet with them sometimes. A gentleman came to me with a tumour of the tongue, which was distinguished from common scirrhus by its being further from the surface, and very distinctly circumscribed: still, from the hardness of the tumour, I was led to suspect that it might be of a malignant nature. Had I found the same kind of tumour in the female breast I should have said that it was scirrhus; but as it had not the character of common scirrhus of

the tongue I entertained doubts upon the subject. As an experiment I gave the patient tincture of iodine, eight or ten drops three times a day, gradually increasing the dose to twenty drops. After taking this for a short time the tumour appeared reduced in size; and on continuing the medicine for some time longer it was still more reduced, and it ultimately disappeared entirely. What the nature of the tumour was I do not pretend to say. I may mention one circumstance connected with this case, by way of putting you on your guard as to the use of tincture of iodine. The patient wished to go into the country, to which I gave permission, provided he would have a medical attendant to look after him while taking this remedy, adding that I could not sanction any patient of mine taking this medicine except under medical observation. He took the iodine without placing himself under medical care; and its action not being properly watched, he one day had a paralytic stroke. He instantly left off the medicine, and he ultimately recovered. This is only one case of many which I might mention, to show that iodine often produces powerful effects on the nervous system, and that it is not to be taken—at least in large doses—without considerable caution. I remember seeing a patient who had a large elastic tumour, or some fluctuation in the tongue, of considerable size, apparently as big as a nutmeg. It was perceptible chiefly on the lower surface of the organ. The surgeon, under whose care the patient was, divided the tongue over the tumour to see what it was, and out came a cyst containing fluid—I suppose an hydatid. The patient got well. These observations are intended to finish the subject to which I before called your attention.

#### PARALYSIS.

I now enter upon another topic. When such a change takes place in the nervous system that the mandates of the will are not conveyed to the muscles, we say that there is paralysis. Paralysis may be, and generally is, attended with a loss of sensation also to a greater or less extent; but this is not a matter of course. The nerves of sensation may be affected without involving the nerves of motion, and *vice versâ*.

Paralytic affections may depend, as you may suppose, on various causes. Mere general deficiency of nervous agency; the accidental division of a nerve of the spinal cord; pressure upon any part of the nervous system; tumours or other morbid alterations of structure in the brain and spinal marrow, will produce paralysis.

Where there is a tumour or morbid alteration of structure, in some instances, the paralysis will come on gradually; but it is a remarkable circumstance that in many instances that is not the case. Disease is going on, perhaps, for months, or even years, and all at once there is a sudden stroke of paralysis. For example, the late Dr. Wollaston, the eminent philosopher, had a disease of the brain, which proved to be a tumour situated in one optic thalamus, and it produced in him a remarkable effect. He saw one half of an object, and not the other



half. He used frequently during life to talk to me on the subject of this peculiarity of vision. He had it when a boy at school, but when sixty years of age he was all at once seized with paralysis in one arm, that extended, and he died. On the post-mortem examination we found a tumour as large as a walnut connected with one optic thalamus. A gentleman consulted me last year who had, all at once, become paralytic in the lower limbs. I need not detail the case; he ultimately died, and on examining the body, I found a tumour in the middle of the spinal cord, at the back, which evidently must have been growing for years. This was proved by other symptoms, but there had been no paralysis. I attended a gentleman for diseased prostate gland; he was in a very miserable hypochondriacal condition, and used to cry without any evident reason for it. One day on going to the close-stool he all at once became paralytic on one side of the body, and he died. On examination we found *ramollissement* of one complete hemisphere of the cerebrum.

The sudden occurrence of paralysis in these cases is to be accounted for in the following manner:—The tumour or morbid alteration of structure goes on in the brain, and then there is a sudden effusion of serum into the ventricles. In Dr. Wollaston's case the tumour grew so gradually that it did not affect the functions of the brain; but all at once it projected into the ventricles so as to produce irritation of the lining membrane, and then there was a sudden effusion of water into the ventricles. It was the same with the gentleman who died from *ramollissement* of the brain. That must have been going on for months, and no doubt produced low spirits, a disposition to weep, &c. On examining the body after death we found the ventricles distended with water, and I conclude that it was the sudden effusion of water there that caused the sudden paralysis. I know of some other cases in which water has been effused into the ventricles of the brain, independently of inflammation, in a very short space of time. The ancient writers distinguished between sanguineous and serous apoplexy. In the former, blood is extravasated from the rupture of a vessel in the brain; in the latter, water is effused into the ventricles, and both occurrences may take place suddenly. I have known a person become quite apoplectic in a few hours, having been perfectly well before; and on examining the body after death, I have found the ventricles distended with serum.

Again, the sudden occurrence of paralysis in the case where there was a tubercle in the spinal cord, I apprehend, was to be explained by this circumstance, that all below the part where the tubercle was situated was in a state of softening, or *ramollissement*, as the French call it; but I shall have to advert to this subject again presently.

Different names have been given to different forms of paralysis. You hear of *hemiplegia*—half the body being struck. Sometimes there is paralysis in one leg, one arm, or down one side of the body, and not the other side, and this form of paralysis is generally called *hemiplegia*. It always depends on disease in the brain itself. The right side of the brain belongs to the left side of the body, and *vice versa*. If the left leg and arm, therefore, become paralytic, you con-

clude, as a matter of course, that the disease is on the right side of the brain. Another form of paralysis is called *paraplegia*. That word has been used rather indefinitely, but still I believe that every one who has employed it has meant to say that the paralysis was not confined to one side of the body, but exists on both sides. The Greek preposition *παρά* signifies "stroke across."

Now, it is to the various cases that are confounded with one another under the name of paraplegia to which I wish to call your attention in this, and probably, in my next lecture.

You will often find a person with these symptoms,—I think I see such a case every month of my life. The patient complains of a difficulty of walking; he finds that he stumbles easily. When he attempts to use his limbs he sometimes finds that he cannot carry his intention into effect; the muscles do not exactly obey his will. He finds that he does not stand steady; that he must put his feet asunder in order that they may be wide, otherwise the centre of gravity is apt to go too much on one side. This difficulty increases, at last he walks very unsteadily indeed; the muscles of the lower limbs become flaccid; the weakness of the muscles extends upwards, and generally there is a loss of sensation. For a long time the latter is not complete, nor is there a complete loss of the power of motion, but the disease is gradually creeping on. By and by the patient complains of a loss of power below his waist, and not only has he a difficulty in walking, but there is a difficulty in making water; he cannot command the bladder, the urine runs away involuntarily, wets his clothes, wets the bed-clothes, and makes him offensive to himself and to others. This generally happens from the bladder being overloaded, and not being capable of emptying itself; though sometimes it is the reverse; the bladder is actually empty, and continues so, for the urine runs through without distending it. Generally, however, it is an overloaded bladder that produces incontinence of urine. The patient then has a sense of constriction as if a hoop were bound round his waist. That is a very constant symptom in these cases. Then he will complain of a sensation as though a ligature were bound round each thigh and each leg, and there is increasing numbness, with a sense of weight in the feet.

In some instances the disease remains just as I have described it; and I have known persons go on in this way for many years. I remember a gentleman who had just the symptoms I have mentioned, respecting whom I was consulted, but for whom no good could be done, and I used to see him crawling about the streets for years afterwards. But in other cases the disease goes on; the lower limbs become completely paralytic, then the upper limbs become affected, first one arm and then the other. In some of these cases the bowels are exceedingly costive; they are not to be acted upon, even by the strongest medicine, and very frequently there are pains in the abdomen. Sometimes you find the disease making rapid and at other times slow progress.

Thus I have given you a general description of the symptoms, such as are applicable to the majority of cases of paraplegia with which you will meet, commencing in the lower limbs. We now



come to consider what are the different causes on which these symptoms may depend, and what the different diseases that are indicated in this manner.

One, and, I believe, the most common cause, is that I have mentioned—a morbid change of the minute structure of the spinal cord; that is to say, softening, or *ramollissement*. The change that occurs at other times in the brain takes place in the spinal cord after a concussion of the spine. A very common effect of concussion is to injure its minute structure, and then to a greater or less extent it dissolves into a substance like cream. In this state of softening it first loses its natural consistency, but still retains the character of solid substance. By and by it becomes completely melted down to a substance like cream; the membranes can hardly be lifted out, and when placed in water the spinal cord floats, and the membranes remain by themselves. What produces this softening I cannot say. Some have said that it is inflammation, but certainly there are no marks of inflammation; there is no unusual vascularity preceding or accompanying the softening; there are no vessels loaded with blood, and, indeed, the parts are rather less vascular than natural. All that can be said is, there is some peculiar change of structure, the proximate cause of which we cannot explain, nor very often the remote cause. A young lady had this state of the spinal cord, and ultimately died from it. She was a healthy young woman in other respects, and there was nothing to explain it. There is one very common cause of it—not in young women but in men—men who rank among what is called the *better* classes, which, I suppose, means only that they are richer than others; at any rate they are not better in the point I am going to mention. There is a class of people, in London especially, who have no employment, who have large fortunes, and who spend half their time in intriguing with women; and in many instances you may trace the disease of the spinal cord to over-indulgence in sexual intercourse. Though we know more of the appearances after death than did the ancients, yet they very well described paralysis arising from this cause when they spoke of it as *tabes dorsalis*.

That is one cause of paraplegic symptoms, but from what other causes may they arise? A gentleman had formerly some pain in the back, or some symptoms which led a surgeon to apply a caustic issue in the neighbourhood of the spine. This was almost forgotten, but about two years ago, in walking, one of his feet gave way, and if his brother had not been with him he would have fallen to the ground; but he was very well again afterwards. By and by, however, he was seized with violent pain around the waist, and it was treated, without any relief, as rheumatic pain. After a time he became completely paralytic in both limbs, he lay in bed for a few days, and then recovered, so that he could walk about the room. This did not last long, he again became paralytic, the bowels were constipated, and no medicine would act upon them. The secretions from the bowels became black, like tar, the urine alkaline, and he died. This was the case which I mentioned just now. On examining the body after death there was a tubercle in the spinal cord, which no doubt had

been growing for years. It was a hard, solid tubercle, and below it the spinal cord was soft. I presume that the pain which preceded the paralysis indicated the commencement of the softening of the cord below the tubercle. I have seen other cases of medullary tumours around the spinal cord producing paraplegia of the parts below.

Another cause of this affection is an unnatural effusion of fluid into the theca vertebralis. A gentleman was brought to London completely paralytic in the lower limbs; he could not even turn in bed. By and by the upper limbs became paralytic, and he ultimately died. On a post-mortem examination I found no morbid appearances, except an immense secretion of fluid within the theca vertebralis; the dura mater and the arachnoid membrane lining it were also entirely distended with fluid, so that when the posterior part of the ventricle was removed, the fluid bulged into the opening. It was not measured, but a large quantity of fluid ran out of the theca vertebralis when the membranes were opened. There was no other disease either of the brain or the spinal marrow, and what produced this unusual quantity of fluid I do not know; there may have been some disease in the minute structure which we could not discover. Sir Astley Cooper informed me of a similar case.

Paraplegia sometimes occurs in patients who labour under carcinoma. A gentleman had a diseased prostate gland; it was much enlarged and indurated, and there was great pain in the region of the prostate. After a time he was seized with severe pains in the back and in the limbs, such as patients frequently have who labour under carcinoma—intense agonizing pain, which nothing will relieve. These pains, in fact, depend on carcinomatous disease in the bone, and the bones of patients thus affected will break from merely turning in bed; I have known this occurrence to take place in the femur. This gentleman, with disease of the prostate, suddenly became paralytic in the lower limbs, and died; there was no post-mortem examination of the body. A lady whom I attended last year was suffering from a hopeless case of carcinoma in the breast, and agonizing carcinomatous pains in the limbs. One day she became paralytic, lost the use of the lower limbs, and died. Here, also, there was no post-mortem examination. But I met with the following case:—A lady consulted me concerning a scirrhus tumour in the breast. She had gone through the operation for it a year or two before; the disease had returned, and therefore, as far as this was concerned, nothing could be done. By and by there were pains in the limbs and in the back. One night, all at once she lost the use of her lower limbs—could not move them. She died; I was engaged at the time, and could not attend the examination of the body, but Mr. Cutler conducted it. He found, as we had expected, carcinoma of the bones of the spine, and the disease had extended to the dura mater. The carcinomatous bones did not press on the spinal cord; but the disease had produced irritation of the arachnoid membrane, and there was a large secretion of bloody fluid into the theca vertebralis near the cavity of the arachnoid. It was evident that the collection of fluid in the theca vertebralis had been the cause of the paraplegia.



It has been said that paraplegia—paralysis of the lower limbs generally—depends on disease of the brain and not of the spinal marrow. This was maintained by Dr. Baillie, and published in a paper of his in the Transactions of the College of Physicians; but he gives no facts on which the opinion is grounded. It seems to have been a notion taken up by him without any facts to justify it. However, there is reason to believe that, under certain circumstances, disease of the brain may produce paralysis in the lower limbs before it produces it in the upper. I examined the body of a man who was paraplegic, and I found water in the ventricles of the brain, but no disease connected with the spinal marrow. That you may have disease, however, in the brain and in the spinal marrow, combined in the same individual, there can be no doubt. Some of those young men, who, from foolish habits, become paraplegic in the lower limbs, have also cerebral symptoms. There may be softening of the lower half of the spinal marrow, and of a good part of the brain. I think that if there is an entire absence of cerebral symptoms you have a right to conclude that the disease does not exist in the brain, but is confined to the parts below; if, however, the patient says he has double vision, if you find one pupil dilated and not the other, and there be pain in the head and giddiness, you have a right to conclude that there is disease in the brain; but still if there were absolute paralysis I should conclude that there was disease in the spine also.

The case which I am about to mention is a very remarkable one. About nine years ago I was sent for into Lincolnshire to see a gentleman who was paralytic in the lower limbs. The symptoms of paralysis had exhibited themselves eight years before, and at the same time there was pain referred to the epigastrium. The disease had now extended upwards, the arms were beginning to be affected, and there was also dilatation of the pupil of one eye; but at the commencement it was a case of regular paraplegia. Neither my advice nor that of any one else did any good, and the disease was left alone. Ten years afterwards his wife was very ill, and he was brought with her to London. She came for medical advice; but his case being considered hopeless he did not consult any one. He was now completely paralytic in his limbs and arms, he could scarcely speak, and he could only just swallow. He lay as though the head were alive and nothing else. His wife died, and he soon followed. I obtained leave to examine the body. Mr. Tatum and another friend accompanied me. We all three made a very careful examination. What we might have found if the spinal cord and brain had been macerated in alcohol, and if we had traced the fibres and examined them with a microscope, I cannot pretend to say; but, with such an examination as we could make in a private house in the course of a couple of hours devoted to it, we could not detect any morbid appearances at all. The spinal cord seemed rather smaller in size than usual, there was some little effusion between the pia mater and the arachnoid, and at the upper part of the spinal cord there was manifestly a blush. The patient had felt for a considerable time pain in the epigastrium, and I thought that might indicate some disease in the plexus

there. We took it home with us; Mr. Tatum dissected it with the greatest care, but nothing could be discovered. Do not, however, suppose that I believe this to be a mere functional disease, because we see nothing after death. The minute organization of the brain and spinal marrow is not visible to the naked eye, and even with the microscope you can only trace it a little way. I doubt not that there was some defect in the minute organization of the body, some change of structure not perceptible to us. I cannot suppose that such a train of symptoms could occur from mere functional disease.

Another cause of paraplegia is inflammation of the lower part of the spinal cord. I read yesterday in a medical journal an account of a man who had pain of the lower part of the back, and in the course of a fortnight he became completely paralytic in his lower limbs. On examining the body after death, the spinal cord was found softened, there was blood extravasated here and there, and it was said that the spinal cord bore marks of inflammation; but I am inclined to believe that inflammation of the membranes is a more common cause of paraplegia than inflammation of the spinal cord itself.

I have known a severe attack of lumbago to be followed by an attack of paralysis. I was consulted by a gentleman who had what was called severe lumbago. I only saw him once, and that in consultation, and I recommended that he should be cupped and take mercury. Some time afterwards I was asked to see him again, and then there was entire paralysis of the lower limbs. He remained in that state for some years, and then he died. After seeing this gentleman a second time, and whose case was clearly one in which severe lumbago was followed by paraplegia, I went to the house of the late Dr. Davies, of the London Hospital, to see his preparations, and amongst them was one of the spinal marrow with the membranes, the lower part, especially about the cauda equina, being encrusted with coagulated lymph. On making inquiry about the preparation he said that it was rather a curious case—that the patient had had violent pain in the loins, which was followed by paraplegia—that he died, and those were the morbid appearances. In fact, he described exactly the case of the paraplegic gentleman whom I had just visited. I have seen, I will not say several, but some cases of severe lumbago in which the patient was threatened with paraplegia, but recovered under the employment of proper treatment. There was a gentleman who had some rheumatic complaint for which he used a liniment made of tincture of cantharides. One day, by mistake, he swallowed a bottle of liniment instead of his medicine. He soon found that he had got something monstrously hot in his stomach. He had to obtain advice, and then an emetic had to be procured, so that three-quarters of an hour were lost, and by that time the tincture of cantharides had nearly passed out of the stomach. Immediately afterwards he was seized with pain in the loins, there was strangury, great pain and difficulty in making water, and this was followed by partial paraplegia; by making an effort he could walk about. I conclude that the operation of the cantharides produced



inflammation of the lower part of the spinal cord. Whether he recovered or not I do not know.

There is no doubt that paraplegia sometimes occurs as the result of functional disease. For example, a young lady, very delicate, with nervous symptoms, weak bodily powers, and an hysterical constitution, and whose sister laboured under an hysterical affection of one limb, began to be weak in her lower limbs, and walked about with some difficulty. The pulse became very small, her hands and feet cold, her appetite bad: she was one of those young women with whom we so commonly meet in the affluent classes of society, and sometimes in the lower. Finding this difficulty in walking about, and being little disposed to it, much more inclined to lie on the sofa, ready to avail herself of an excuse for not making exertion, she consulted a physician in the country, who told her that she had better use crutches. Her limbs then became paralytic, so that she could not stand, and it was supposed that there was disease in the spine. I went to see her, and after taking great pains I concluded that it was one of those cases so common among hysterical women. I advised that her attention should be called to her case as little as possible, that she should take steel from time to time, that she should be encouraged to use her limbs, that the crutches should be taken away, and a bar put across the room, by holding which she might walk along, and under this treatment she, in the course of a considerable time, walked about. She continued delicate, but the paralytic symptoms were gone. A poor girl was in this hospital, under the care of Dr. Seymour, for what he considered a mere hysterical and nervous affection of the limbs—a girl that wanted tonics, steel, and good diet. She went out of the hospital; some person under whose care she came thought that paralysis was coming on, and he cupped her again and again, blistered her, and kept her low. All the time that this treatment was pursued, she got worse, and she came into the hospital again, with her lower limbs paralytic, with large sloughs on the nates and ankles, and she died. On examining the body after death we could find no morbid appearances whatever, and, taking the history of the case and the post-mortem examination together, I cannot but believe that the disease under which she laboured, was that general want of nervous energy to which hysterical young women are liable, and that the aggravation of the symptoms was the consequence of injudicious treatment by taking away blood from a person who rather wanted blood put into her, and by tormenting her with other painful remedies.

These are the principal causes of paraplegia affecting the lower limbs, so far as I have had an opportunity of observing the disease. I need not tell you that diseases in the vertebræ will produce paralytic symptoms; but it is not my intention at this moment to enter on diseases of the spine.

## LECTURE XVIII.

## PARALYSIS—(Continued.)

IN my last lecture I described a class of paraplegic cases, in many of which the paralysis affects the lower limbs first, then creeps upwards and attacks the upper limbs, the brain ultimately becoming affected. It is not, however, a matter of course that the paraplegia should begin in the lower limbs; it may commence in the upper limbs. It may be the result of disease affecting the upper portion of the spinal cord, that disease being either inflammatory or chronic—an alteration of structure, in fact; there being the same differences here as when paralysis affects the lower part of the spinal cord.

There is on the table a preparation taken from the body of a gentleman whose case I will mention. He was a young man of irregular habits, drinking a large quantity of wine, and a good deal exposed to wet and cold in hunting. From this exposure to cold and wet he had a severe pain in the neck, which was supposed to be of a rheumatic character. He neglected it, went hunting, and drank wine as usual. In spite of this neglect, the pain subsided, and he thought that the disease was gone. But about three months afterwards he became paralytic in one arm, and then in the other. The muscles were not all paralysed, for with one hand he could take hold of the other, and lift it out of its place; but after a time the arms became completely paralytic. He now came to London and placed himself under my care. There was tenderness of the neck, there appeared to be some enlargement of its posterior part, and by and by one lower limb became paralytic, and then the other. He subsequently became comatose, lay in that state some days, and then died. On examining the body after death we found the original disease to be that which you now see on the table. A tumour was inside of the theca vertebralis, but outside of the dura mater. There was a deposit of lymph, of considerable thickness, which had become organized, extending from the great occipital foramen down to about the fourth cervical vertebra, but it was not quite sufficient to press on the cervical portion of the spinal cord. Outside of the spine there was a quantity of coagulated lymph—a large mass along part of the bodies and sides of the vertebræ, and this communicated with lymph inside by processes of lymph extending through the openings by which the nerves passed out to form the cervical plexus. The immediate cause of death was effusion of fluid into the ventricles of the brain, that circumstance occurring in this case which I mentioned in the last lecture. The malady went on till the ventricles were attacked, and then the fatal disease was superadded to the original affection. There was no disease in any part of the spine below that I have mentioned.

In this case the upper limbs became paralytic first, and the lower afterwards, and that is the usual course where there is disease affecting the upper portion of the spinal cord. It is the case in disease of the vertebræ, as I shall mention presently.



A lady came to London some years ago to consult Sir H. Hallford and myself. She had become paralytic in the upper limbs, but that was all. She could walk about and do every thing but use her upper limbs; and in these one muscle had given away after another till the paralysis was complete. She then began to experience considerable difficulty in swallowing; showing that the disease was not under the control of medical treatment, and we advised her to return to the country. She went, and there she died. I am not certain whether or not she became paralytic in her lower limbs; but her surgeon in the country examined the body after death and sent the result. The disease was confined to the cervical portion of the spinal cord, and from ramollissement, similar to that which I described as taking place in the lower part of the cord, it was reduced to the consistency of cream.

Cases of paraplegia affecting the upper are not nearly so common as those affecting the lower limbs; but we see them every now and then. The opportunities of post-mortem examination, of course, are rare, but I have conducted two, and from these I should conclude that the seat of the disease is generally to be found in the cervical portion of the spinal cord.

Caries of the spine produces paralysis of the parts below, as you are well aware, and so far there is a resemblance between the symptoms produced by caries of the spine and those diseases of the spinal cord to which I have adverted in this and the preceding lecture. Owing to this similarity between the symptoms of the two diseases, cases of paraplegia are continually supposed to be cases of diseased spine. This, however, is a great error, because the treatment proper in the one case is quite improper in the other. Where there is caries, it is necessary that the patient should remain a year or two in a recumbent posture, but that is not requisite in cases of disease of the spinal cord, and probably is sometimes injurious. In many cases of caries it is right to make caustic issues, apply setons to the back, and adopt counter-irritation; but, where there is disease of the spinal marrow, if these remedies are not useless, yet they torment the patient, make a great demand on his bodily powers, and besides exhausting his strength, are sometimes absolutely injurious. Over and over again have I seen cases of paraplegia depending on disease of the spinal cord treated with caustic issues, seton, and blisters, but without being productive of the smallest benefit; on the contrary, they are generally prejudicial, independently of which they make the patient miserable.

But how are we to distinguish cases of caries of the vertebræ from cases of paraplegia depending on disease of the spinal marrow? In the former there is generally pain in that part of the spine that is affected. There is one kind of caries, which I call rheumatic caries of the spine, in which the pain is very severe, and in which pain is produced by percussion on the spine; even in cases of scrofulous caries there is generally some pain in the part affected, and some pain on percussion, but it is not constant; and there are many cases of scrofulous caries in which this diagnostic symptom (pain) is abso-

lutely wanting. This circumstance will help you in the diagnosis to a certain extent, but it is not of itself sufficient. If there be great pain in one part of the spine, and pain on percussion, you may be pretty sure that it is not disease of the spinal cord. I speak of pain that is indubitable, not imaginary pain. It is easy so to squeeze the processes of the vertebræ that the patient says it gives him pain. Still the absence of pain does not prove that the disease is not in the vertebræ, because in cases of scrofulous disease sometimes there is no pain. Paralysis, however, in cases of disease of the vertebræ, does not take place at an early period; it rarely occurs before there is angular curvature of the spine, and sometimes curvature to a considerable extent. That is a very important diagnostic mark. In cases of disease of the spine there is generally cramp in the lower limbs, and the posture of the patient is of a peculiar nature. The flexor muscles generally act, draw up the thighs and bend the legs, and you will find the patient getting into that position, with his knees drawn up towards the chest. By combining these diagnostic marks with each other you may generally make out whether the disease is within the theca vertebralis or external to it.

I now come to make some observations on the treatment of these cases, but it is rather difficult to lay down any clear rules for your guidance; that is, the treatment ought to differ according to the nature of the disease, but we have not yet sufficiently advanced in our knowledge of this complaint to be able to state positively whether the disease be of one kind or another. If the disease be an inflammatory affection of the membranes you may distinguish it tolerably well; but if it be of a chronic character, it is difficult to discriminate between softening of the spinal marrow, tubercles in the spinal cord, and effusion of fluid into the theca vertebralis. I really am not able at present to tell you how to distinguish one of these diseases from the other, in the living person, besides which the three may be combined together, or there may be one first, and the others may supervene.

However, let us suppose that there is a case, such as I have just described, of inflammation of the membranes of the spinal marrow. The patient comes to you with a severe attack of dreadful lumbago, and by and by he states that there is numbness in the legs, and then difficulty in moving them. In this case you may be pretty sure that there is inflammation of the membranes of the lower part of the cervical cord. How is that to be treated? In the first place take blood by cupping, from the loins, and repeat it according to circumstances. Begin by purging the patient, clearing the bowels well out—a right plan to pursue in all cases of inflammatory disease. Then put the patient under the influence of mercury, exhibit calomel and opium, and treat him as you would a patient labouring under pleuritis or iritis. If I am not much mistaken I have several times seen the disease stopped by the exhibition of mercury. I have known a patient labouring under numbness of the limbs and incipient paralysis, recover when the gums were made sore by mercury. But if you are called in at a late period, when the inflammation has subsided, and



the paralysis consequent on it remains, even then you cannot do better than put the patient under a course of mercury, though not such a course as you would employ in the beginning of the disease. You must not now exhibit two or three grains two or three times a day, but a mere alterative course—five grains of Plummer's pill, night and morning—the eighth of a grain of bichloride of mercury twice a day, in addition to which you may apply blisters to the lower part of the back.

The result will vary in different cases according to the time at which the treatment is commenced, or according to the intensity of the disease. In some cases you may obtain a perfect cure under the use of mercury; in others, an imperfect one. A gentleman riding in a second class railroad-carriage was exposed to a draft of cold northeasterly wind from one to two hours. The next day there was pain in the neck, and two or three days afterwards his hands were benumbed. In the course of a week both his arms became paralytic, and then the lower limbs also. We put him under a course of mercury, and he partially recovered, so that he was able to walk about and write, but he was still paralytic to a certain extent.

The treatment of a chronic affection of the spinal cord producing paralysis, must be, to great extent, empirical, because you cannot make a certain diagnosis. Let me repeat what I have just now observed, that I have never seen any beneficial results arise from the use of counter-irritation; on the contrary, I have often seen it productive of mischief. Probably the bowels are very torpid,—they will require to be kept open, and it is very difficult to effect it. Sometimes very strong aperients are necessary for this purpose; but it is essential that they should be kept open, for the secretions of the digestive organs are very often exceedingly disordered. The stools will be black, like tar, and the lodgment of the black secretion in the intestinal canal, appears to be productive of great mischief to the system. Calomel and a black draught may be exhibited every now and then, but a patient cannot take them from day to day. Sometimes the comp. ext. colocynth will be sufficient, but simple purgatives often fail. The pills which I am about to mention I have found to be convenient in cases of this kind. Two scruples and a half of comp. ext. colocynth; half a scruple of soap; one drop of croton oil. Let these be well rubbed up and carefully mixed, and divided into a dozen pills, one or two of which may be taken every night or every other night when wanted. These are excellent pills; they cause nothing like the inconvenience produced by large doses of croton oil, and are very efficient indeed. The disease is very probably quite incurable, and it does not matter what medicine you give the patient. But still every now and then the progress of the disease is stopped, and the patient gets very well again.

The treatment which I have found to be most successful, and under which I have seen the greatest benefit arise, is a grain of zinc made into a pill and given three times a day, and then a draught of twenty minims of tincture of cantharides to wash it down. If you dissolve the sulphate of zinc in the draught it makes it nauseous,—you may

as well give ink. After a time the sulphate of zinc may be increased, and if you please, you may carry it up to five or six grains; but I do not advise you to do it, for if you increase it to a certain point, it makes the patient sick, and you cannot induce him to take it afterwards. It is from the continued use of the zinc, and not from the exhibition of large quantities, that benefit is to be derived. The zinc may be increased to a grain and a half, and the dose of tincture of cantharides may be also increased, but I do not advise you to go beyond what I have stated of the latter; for if you do it is very apt to irritate the urinary organs. The tincture of cantharides is a diuretic, and some have supposed that it does the most good when it acts as such; probably that may be the case, but it seems to be a stimulus to the nervous system also. I mentioned a case in my last lecture in which a gentleman became paralytic in the lower limbs from inflammation of the lower part of the spinal marrow, induced by a local disease arising from the tincture of cantharides swallowed by mistake. It is easy to suppose that large doses of this agent may excite the vessels of the spinal cord so as to produce inflammation, and that very small doses may be a grateful stimulus to it, tending to restore its power in cases of paralysis. The best recoveries that I have seen, have been under this treatment. Some patients have appeared to get very well again; in others the disease appears to have been suspended,—it has made no farther progress. I see a gentleman every now and then who laboured under paraplegia, and in whom this treatment was employed. He is now able to walk about, though his limbs are still weak; he has been neither better nor worse for some years. In other cases I have thought that benefit has arisen from the long-continued use of very small doses of bichloride of mercury combined with tincture of cantharides. Small doses do not seem to act as mercury on the system. I apprehend it acts much in the same way as the sulphate of zinc. Exhibit the sixteenth of a grain of bichloride of mercury in a certain quantity of tincture of cantharides, in a draught three times daily, and such plan of treatment will sometimes be useful. But it is right to state that in a great number of cases of chronic paraplegia the disease is incurable. The disease, however, may go on for years before it ascends to the brain and destroys life.

I have described to you paralytic affections occurring in cases of hysteria. These instances are not very uncommon, but paralysis arising from hysteria is very different from that originating from organic disease or pressure on the spinal cord. In hysteria the evil is not that the muscles do not obey the will, but the will is not exercised. It is a remarkable circumstance that a woman will be paralytic, think that she cannot use her limbs, and yet on something exciting or agitating her she can walk very well; and sometimes what is supposed to be paralysis in hysterical women is altogether a cheat. A young lady was supposed to be paralytic in her lower limbs, but on some one going in to look at her, they discovered her standing on a chair to reach down her bonnet. It is right that you should be aware of the tendency to practice deceit in all hysterical



persons, and that you should make allowances for it; for it is a curious fact that some of those who are prone to deceive about their complaints turn out very well afterwards, and constitute some of the best members of society. One person will pretend to pass gravel which she has picked out of the earth; another will pretend to pass black urine which she made black by mixing ink with it; and another will pretend to be paralytic who is not paralytic at all. You should never expose these patients if you can avoid it, but try to get their attention directed to other things; for if you expose them, even to their own families, they will scarcely ever recover their character, whereas when the disposition to hysteria is removed, many of them become excellent persons.

As this is not a systematic course of lectures, I am not particularly careful about the order in which I bring the subjects before you; and I shall conclude this lecture by adverting to some other cases of paralysis about which you will be consulted, of a different nature from those I have hitherto described. You will find a person paralytic on one side of the face, and nowhere else, and this may indicate some formidable disease, but that is not usually the case—there is no great mischief, and the patient gets well. The paralysis, if confined to one side of the face, does not excite any fear, as in the case of cerebral paralysis. It frequently arises from pressure or other injury affecting the portio dura. A person is exposed to a draft of cold air, and the next day one side of the face is paralyzed, but it is unaccompanied with pain; the patient, however, becomes frightened, fancies that she is going to be paralytic, and her friends participate in the feeling. Let her be careful not to expose herself to the draft again, give her blue pill every night, an aperient every second or third day, let her live moderately, and in nine cases out of ten the muscles will begin to act, so that in two or three months she will be well. I cannot exactly say what is the pathology of such cases as I have just described. There is some deficiency in the nervous power; there may be inflammation of the neurilemma, or of the canal through which the nerve passes, but certainly there is no pain indicating its presence. There are, however, other cases in which there is clearly inflammation—inflammation of the petrous portion of the temporal bone. A gentleman was seized with terrible pain in the ear, it increased in severity, went to the head, became intolerable, keeping him awake at night, and making him almost delirious. One side of the face became paralytic, and he came to London just at that period. Dr. Chambers and myself were consulted on the case, and we concluded that there was inflammation of the petrous portion of the temporal bone extending from the tympanum. We cupped him again and again, put him under mercury, and made the gums sore. The pain then relaxed, the paralysis was gradually removed, and he got well. I saw him lately, and found him using one side of the face as well as the other. I believe that in these cases inflammation of the tympanum takes place first, and that it extends thence to the bones in the neighbourhood.

The treatment to be employed is that which I have just mentioned,

and it almost invariably succeeds; namely, taking away blood, purging the patient, and making the gums sore with calomel and opium.

Partial paralytic affections may take place anywhere. A dropping of the eyelid—ptosis, from paralysis of the levator muscle—is not very uncommon. Occasionally it depends on something in the state of the system, apparently without organic disease, causing an insufficient supply of nervous energy to the muscle. It may be relieved in some instances by a course of blue pill, occasional purgatives, and so on; but where it has existed for a long time, and these simple rules have failed in removing it, according to my experience it has originated in disease within the cranium, and you may expect to find deposit on the nerve there, or disease in that part of the brain from which the nerve arises. A gentleman had tic douloureux of the face; he then had epileptic attacks and ptosis of one eyelid; the eyelid completely dropped. The body was examined after death, and we found the base of the brain—the cerebrum—in a state of ramollissement to a considerable extent. All that part of the brain from which the nerves had originated, was in a state of softening, and this accounted at once for the epilepsy, the tic douloureux, and the ptosis. Paralysis of the upper eyelid after an injury is not of serious consequence; it may arise from an extravasation of blood pressing upon the nerve, and that may be absorbed; but it is a very bad symptom when it follows inflammatory disease of the brain; for it is then generally the result of a deposit of lymph, or probably of matter, at the part whence the third pair of nerves has its origin.

It is not unusual to find partial paralytic affections in the lower limbs. A patient is exposed to cold, and then finds that he is unable to walk. On examination you discover that a part of the leg is numbed, and some of the muscles, but not all, are paralytic. Put him on a course of blue pill, combine with it the use of some liniment, and he gets well. It is an affection of a nerve itself, not of nervous centres.

You will be consulted about children who are paralytic. There is a peculiar paralytic affection of the limbs, that occurs in children who are very young. The child generally has a fit at the time which has terminated in water in the brain, and some time afterwards one or more limbs become paralytic, or one set of muscles in a limb and not the other. In some cases the muscles at the back part of the leg become affected, the heel is drawn up, and the child grows up with contraction of the foot. It is necessary at some time or other to divide the tendon and relieve the contraction. Sometimes all the muscles of the lower limb become paralytic, and in other cases there is paralysis in one arm. I know a gentleman who, when he was an infant, had some affection of the brain, in consequence of which, one arm became paralytic, and has continued so through life. Partial paralysis is often the cause of squinting; some of the muscles over the eyes become paralyzed, and not the others.

I saw a child with a very singular paralysis of the following kind:—It seemed that the pharynx was paralyzed, or some of the muscles external to it, which are necessary to deglutition, for it was with the greatest difficulty that he could swallow. It was evidently a para-



lytic affection which had come on suddenly without inflammatory symptoms. I never heard the result, but I suppose the child must have died from starvation. It could scarcely take sufficient food to enable it to grow up. I really do not know what is the change produced in the brain in these cases. It does not appear to be of any great extent, and does not extend afterwards.

I need not state that every part of the body is represented in the brain. As the mandates of the will go from the brain to every muscle, so from every part of the body, sensations are communicated to the brain, and injury to that part of the brain which belongs to a particular muscle may produce paralysis. The paralysis having once taken place, it seems to go no further. It does not destroy life; but in most cases, being once established, it remains through life. The patient is never very well; he may, however, live to be old, and if you examine the brain you find nothing at all to account for the symptoms.

A paralyzed limb does not grow like the other limb, and this is a source of great inconvenience in the lower limbs. As the child grows up, one leg is shorter than the other; some of the muscles may act and some not, but the whole of the limb suffers, and the patient is under the necessity of having a shoe with a thick sole to enable him to walk better.

If you are consulted on one of these cases in the very first instance, I believe that you may do good by putting the patient under the influence of mercury. Even within the first two or three months it is well to try the effect of mercury on what I call, in order to distinguish it, "infantile paralysis;" but after that I do not think that it is worth while to have recourse to remedial measures. I have tried all sorts of remedies, and I have seen them resorted to by others, but I never saw any good arise from them. The best thing you can do for a patient growing up with paralysis in the lower limb is, to consider whether any mechanical contrivance can be made use of to take the place of the paralyzed muscles, and enable the child to walk about better than he would otherwise be able to move.

---

## LECTURE XIX.

### EXTRACTION OF FOREIGN BODIES.

Two or three years ago I was consulted concerning a young person, a female, who had some complaint in her nostrils. There was a putrid discharge from them, and those symptoms were present which usually indicate the presence of diseased or dead bone of the nostrils; and presuming that this was the nature of the case, I prescribed sarsaparilla, and treated her accordingly. This complaint had been going on since she was quite a child, and when I saw her

she was eleven or twelve years of age. Not long ago, in blowing her nose, something came out of her nostrils—a large solid substance. Her family thought that this was the piece of dead bone which was expected to appear, and it was sent to me; but, on examining it, I found that it was not bone, nor had it the appearance of ever having been organized. It was convex on one side and concave on the other, and seemed to have been formed upon a nucleus. Dr. Prout was good enough to examine it chemically, and he found it to consist of dry mucus, with phosphate of lime, such as is secreted by an inflamed mucous membrane. The mucous membrane of the nose, like that of the bladder, will, when irritated, secrete phosphate of lime. I was led, from this, to conclude that, originally, some foreign substance had been introduced into the nose, and if it were a round body, this would account for the concavity on one side of the concretion. Here was a case in which there was great reason to believe that some foreign body had been introduced into the nostrils, and had remained there for years, producing all the symptoms usually arising from diseased bone.

A little boy was brought to me a few years ago, with a putrid discharge from the nostrils. There, also, I thought that there was a piece of diseased bone. He had had this for one or two years. On looking into the nostril, however, I perceived, at the upper part, something rather larger than a piece of dead bone might be supposed to present. I took hold of it with the forceps, and, on removing it, found it was a tamarind-stone which the boy had thrust into the nostrils a year or two before, no one knowing any thing of it. In each of these cases, when the foreign body was taken away, the symptoms subsided.

Another patient was brought to me supposed to have diseased bone in the nose,—a little girl in whom there had been a putrid discharge for two or three years. There I could see nothing, but, from the symptoms, I concluded that disease was going on in the bone. I prescribed for this patient sarsaparilla, and one morning something was blown out of the nose. It was brought to me, and I discovered that it was a piece of sponge that had stuck in the nostril, and was now filled with mucus, and, I suppose, some phosphate of lime. As no one knew the history of the case, I suppose that the child must have thrust it in herself. It is not very uncommon for children to get foreign bodies into their nostrils, and these cases show that you may be led into great error by supposing that there is diseased bone when there is none at all.

In two of these cases the foreign body was blown out—came away spontaneously; and in the case of the tamarind-stone I removed it very easily with a pair of forceps. Other means, however, may be adopted for removing these foreign bodies. A child was brought to me who had got a glass bead into the nostril, and it was known that it was there. I tried to take hold of it with the forceps, but they slipped over its smooth surface. I then introduced a probe, bent in a peculiar manner, which, getting behind the bead, pulled it out.

Foreign bodies may get into the external meatus of the ear. A



child was brought to me who had got a broken piece of slate-pencil, about half an inch in length, in the meatus. You might suppose it an easy matter to get a foreign body out of the external meatus of the ear, that part being so much more in sight than the nostril. But it is often very difficult, and for this reason: in the nose you may poke with the forceps, and do no harm. I have already stated what great manipulations the nostril will bear. But what will happen if you poke with the forceps in the ear? A child was brought to this hospital with a pea in the ear. A great many attempts had been made to remove it prior to the child being brought here. The pea was then out of sight, and the child had very alarming symptoms of inflammation of the brain. The little patient died; and it was found that in attempting to extract the pea, the membrana tympani had been destroyed. The injudicious poking of the tympanum with the forceps had caused inflammation of the bone of the tympanum, and a separation between it and the dura mater, so that the child died in consequence of the rude introduction of the forceps into the ear. Indeed, it is a very difficult thing to extract a foreign body from the ear with forceps, and if you attempt it you must proceed with the greatest caution. I have, however, extricated foreign bodies from the ear with a narrow pair of forceps, by letting the rays of the sun shine into the meatus, and then introducing the forceps, so that one blade came upon each side of the foreign body. But if you attempt it without the rays of the sun shining into the ear, and using your eyes carefully, and your hands slowly and attentively, nothing is more easy than to drive the body against the membrana tympani, break the latter, and push the body into the tympanum. I do not say that you are not to extract foreign bodies from the ear with forceps, but you must do it with the greatest care; for the want of care may lead to the destruction of the patient. But I have more frequently succeeded in these cases by other means. I stated that a child was brought to me with a piece of slate-pencil in the ear. I placed the child opposite the light, and injected some tepid water into the ear with a syringe. There was room for the water to penetrate into the meatus, and as it came back it washed out the slate-pencil. There was a case brought into the hospital in which there was some foreign body—I believe a pea—in the external meatus. I tried all sorts of methods to get it out. I could not use the forceps, and it nearly filled up the meatus, so that either water could not pass behind it, or it was so jammed that the water injected by the syringe would not wash it out. I said, "Let it alone, let it remain there, the pea in all probability, will dry and waste of itself, and then it will come out, or when it is rotten it may be washed away with a syringe; but I will not make any further efforts to remove it now; for I may drive it into the tympanum and kill the patient." In one case, where a foreign body had got into the ear, I extracted it, like the glass bead, with a bent probe, which I introduced very carefully behind it.

Having called your attention to this subject, I shall proceed to speak of foreign bodies in other cavities. You may find them in any cavities that have natural outlets. They may be thrust in, or they

may be swallowed. They may, when swallowed, pass at once into the stomach; some, from their bulk or irregular figure, stick in the pharynx or œsophagus; and others, even of small size, if sharp and pointed, may stick in the pharynx or tonsils.

The small bones of fish, if they be swallowed, and stick anywhere, generally do so in the tonsils. The following is not a very uncommon case:—A patient sends for you who has swallowed a fish-bone; he feels an uneasy sensation, and every time he tries to swallow, he finds pain. You look into his throat and see a fish-bone sticking in the tonsil. Nothing can be more easy than to hold down the tongue with one finger on the flat end of a spoon, take hold of the fish-bone with a pair of forceps, and remove it. The fish-bone, however, may be stuck in the lower part of the pharynx, and then you cannot see it; but you may feel it with the finger, and having so done, you may seize it with the forceps and remove it. The part at which fish-bones most frequently stick is where the œsophagus and pharynx unite just behind the cartilages of the larynx. The reason why they are so liable to stick there is, that the cartilages of the larynx are not capable of being dilated; whereas, if they pass lower down, the whole tube of the œsophagus may become dilated.

The *treatment* of these cases differs much according to circumstances—according to the exact position of the body swallowed, and according to the nature of the body itself. A person swallows a large piece of meat, and it sticks somewhere in the pharynx or œsophagus. If, on introducing the finger, you feel it quite distinctly in the pharynx, there is no reason why you should not remove it with forceps. But if it lodge in the œsophagus, then the best thing that can be done is, to introduce a common œsophageal bougie and push the piece of meat down into the stomach. A little skill is necessary in introducing the bougie. There was an Indian juggler who used to swallow a large swordblade. The sword was straight, and he pushed it readily into the stomach. The way in which it was done was this:—The man threw his head as far back as possible,—and, from early tuition, he could do that farther than any of us,—so that he made the mouth, the pharynx, and the œsophagus, one straight line, and then he introduced the sword. You should act on this principle in introducing a bougie. Let the patient be placed on her chair, as it occurs more frequently in hysterical women than in others, with her head turned back as far as possible; and then having a bougie well oiled, introduce it into the pharynx, and with the finger push it down. If it meets with resistance, use moderate force to push the piece of meat into the stomach. A moderate force is always sufficient; you must be careful how you employ great force. I knew of a case where a surgeon, using a bougie roughly, pushed it through the œsophagus into the posterior mediastinum and killed the patient. I heard of another case where the same thing happened. However, it must require considerable force to push the bougie through the œsophagus; and it is only a moderate force that is necessary to push the meat into the stomach. But supposing it to be not a piece of meat, but a piece of bone, or any other foreign body; first ascertain whether it is within



the reach of the finger. I have already stated that a large piece of bone will generally stick in the lower part of the pharynx where that and the œsophagus unite, and you may then feel it with the finger. Endeavour to introduce the finger behind the glottis, and if you can do that, seize the bone with the forceps. You must be prepared with different kinds of forceps, some of which open laterally. It may be that the foreign body lies with two flat surfaces, one to one side and the other to the other, and then the forceps that open laterally answer best. If it be in the other position, with the flat surfaces looking forwards and backwards, you must have forceps which open in another direction. You may sometimes employ shorter forceps, and in other cases longer, but they should be of tolerable length.

But let us suppose that the foreign body cannot be felt with the finger, are you then to attempt to take hold of it with forceps? Really, to extract a foreign body from the œsophagus, below the part at which you can feel it with the finger, would be a very difficult operation, and probably not a very safe one; for, in poking with the forceps, you might carry them through the coats of the œsophagus. It might require great force to drive a bougie through them, but much force would not be required in order to drive through them a strong body made of steel. If the foreign body be low down, and you are to extract it at all, you must do it by other means; but probably it will be best to push it on into the stomach. If it be small enough to pass the œsophagus, it certainly will be small enough to pass the pylorus; at least, in all probability. You may push it into the stomach best by means of a common bougie, or what is called a probang—a piece of whalebone with a sponge at one end. This is to be introduced into the œsophagus and pushed down towards the stomach. It may operate in two ways. It generally acts by the sponge pushing the substance into the stomach; at other times, if the foreign body do not occupy the whole diameter, but only impinges by its two shoulders, the probang may be passed below it, and as you pull up the sponge the foreign body may be drawn up with it. You make a sort of blunt hook, to be fastened to the whalebone, the intention of which is that it should be passed below the foreign body, and the foreign body dragged up by the blunt hook. The best thing, however, that you can do is to push it into the stomach, and that is the most easily accomplished.

Although it is easy to speak of dislodging these foreign bodies, you will not always find it so easy in practice; and if you cannot easily remove them, what are you to do? If the patient suffer very little inconvenience, and the part be beyond the reach of the finger, I think it is best to let them alone; but if the part be within reach of the finger, then there can be no doubt as to the propriety of attempting to remove them. If, however, there be great difficulty in dislodging the body, then it is best to let it alone, and nature will generally do what is wanted. The œsophagus will, by giving way, dilate below; the fibres will contract above; and gradually the thing will creep down to the stomach; or, perhaps, it may be hawked up again. I was called to a gentleman who said that he had swallowed a large

piece of fish-bone—a part of the head of a cod. I could feel nothing with the finger; I passed the bougie into the stomach, and, to state the truth, I rather doubted whether any thing had lodged there. As his life was not in danger, although he was suffering some inconvenience, I thought I would let it alone. In two or three days he hawked up something, and there came away a piece of bone, larger than the thumb, which had been lodged in the œsophagus. According to my experience, in the majority of cases where foreign bodies are stuck in the œsophagus, if you fail in relieving the patient, nature will accomplish it. I cannot say that I have seen any cases where any ultimate harm has arisen from a foreign body stuck in the œsophagus. Such cases have occurred, and there have been instances where a foreign body has pressed on the trachea and obstructed respiration, so that the patient has been nearly suffocated. If you are called to such a case, the first thing you will do is, to make an opening into the trachea so as to enable the patient to breathe, and then you may examine the œsophagus and pharynx, and ascertain whether the foreign body can be removed or not. Cases have been recorded where an incision has been made into the œsophagus for the purpose of taking out the foreign body lodged in it; and other cases are upon record where the foreign body has occasioned suppuration of the œsophagus, and an abscess in the neck, and on opening it the foreign body was found in the cavity of the abscess. Such instances, however, are very rare; and on looking over the cases recorded in the Memoirs of the French Academy of Surgery, where there is a large collection presented, drawn from the authors of all ages, I do believe that, in the great majority, where the operation has been performed for the removal of foreign bodies from the œsophagus, the patients would have done much better if they had been left altogether to nature, and to the operation of their own powers.

Now, supposing the foreign body to have got into the stomach, what will it do there? Why, small bodies over and over again get into the stomach, and come away. If it be a sixpence, or a farthing, you may be pretty sure that in the course of two or three days it will be found in the evacuations. It is astonishing what foreign bodies will pass through the stomach, and go through the intestines, without doing harm. A gentleman, in a paroxysm of insanity, swallowed a pair of compasses three inches in length, and the family sent to me in great fright. The compasses had not stuck in the œsophagus, but had gone into the stomach. To think of looking for them there was quite absurd, and I told them to let him alone. He must have swallowed them with the blunt end forwards, and the probability was that they lay towards the pylorus. In the course of a fortnight, without his having suffered even a colicky pain, they one day found the compasses in his close-stool pan. He lived a considerable time afterwards, and never suffered any inconvenience from this exploit. Several persons have been in the habit of swallowing large bodies, and getting money for exhibiting the feat. A sailor, in America, in a drunken fit, swallowed a large knife. It went into the stomach, produced some colicky pains for a few days, and was then voided per



anum. Two or three days afterwards he did the same thing, and finding that people stared at him, and gave him money, he went on with it. People went on purpose to see this exhibition of swallowing knives. By and by, however, he got into very ill health; there was severe colicky pain in the intestines, and in the abdomen; his stools always came away black; and he sank, and died. On examining the body, several blades of knives were found, half destroyed, from the oxidation to which they had been subjected. But it seemed that the immediate cause of death was a large knife which stuck across the upper part of the rectum, running through both sides of the gut.

The great majority, even of large substances, taken into the stomach, pass through the pylorus, travel along the intestines, and find their way out at the anus. There are particular parts of the intestines, however, where these foreign bodies are most likely to stick; they may remain in the cul-de-sac of the cæcum. A woman was brought here with a tumour in the right iliac region. She died, and, on examining the body after death, an abscess was found connected with the cæcum, and in the middle of the abscess there was a pin. Over and over again women and children swallow pins, and they generally pass away without doing harm, but in this case the pin stuck in the cæcum, and getting into the cellular membrane, it caused a small infiltration of feculent matter and produced the abscess. The part, however, in which foreign bodies are most likely to remain, is the rectum. No doubt that abscesses by the side of the rectum and fistulæ in ano, in many instances, arise from some foreign body sticking in the rectum. I was called to a gentleman suffering great uneasiness in the rectum. At first I thought there were piles, but when he described his symptoms more accurately, I was convinced that there was something more than internal piles. I introduced my finger into the rectum, and found that there was some hard substance above the sphincter, and which appeared to be half in the gut and half out. With some difficulty I dislodged it, seized it with a pair of forceps, and removed it. It turned out to be a large core of an apple, the sharp edge having stuck in the rectum. If it had not been thus removed, it would have made an abscess. I was sent for to a gentleman with a large abscess by the side of the rectum. The patient had a dry, brown tongue, and other typhoid symptoms, and I therefore concluded that it was full of putrid matter. I opened the abscess freely, and let out a large quantity of stinking putrid matter. Having done that, I thought it advisable to examine the abscess with my finger, and I found a hard body sticking in it, like a great pin. With some difficulty I removed it, and it proved to be a fish-bone, perhaps two inches in length, one end of which had stuck in the side of the rectum, and the other lay across the abscess. He had swallowed it without being aware of it; it had passed easily down the œsophagus, through the stomach and pylorus, and all the coils of the intestines and cæcum, but when it reached the rectum, it passed through one side of it, allowed some of the fecal matter to intrude by its side, and caused this large abscess. Many cases are recorded by writers where the foreign bodies that have been swallowed have produced fistulæ.

When a foreign body has got into the stomach, you must consider it as out of your hands altogether, except that you must keep the bowels gently open. All violent purging should be avoided; for if there be a sharp pin, great peristaltic action may cause it to do much injury. You may exhibit lenitive electuary or castor oil, but you must not be in a hurry to expel the substance, for it will generally pass after remaining in for a week or a fortnight, and if it be a small body it will come out much sooner. For the most part there is but little cause of apprehension, though in some cases unfortunate occurrences arise, as in the case of the woman who swallowed the pin. It is desirable to see that the substance does come away, and you must take care that the patient has his evacuations in a close-stool pan, and that they be minutely examined.

It has been proposed by the old writers to make an incision into the intestines, but at this time of day I do not think it is necessary to explain how much better it is to leave the case to nature than to have recourse to such a dangerous operation.

There is another matter of considerable practical importance, to which I wish to call your attention, with respect to matters supposed to be stuck in the œsophagus. A woman was brought to town who was thought to have swallowed a piece of bone, and I believe that there was no doubt that she had done so. I introduced my finger, and, not being able to feel it, I concluded that it was below the reach of the finger. I then passed an œsophageal bougie into the stomach, but could not feel it; I then introduced a probang with a sponge, but with no better effect; but still the woman had the sensation of its being there. I now began to doubt whether it really stuck there, and to suspect that the sensation she experienced indicated that some part of the œsophagus had been abraded or torn by the foreign body, but that the body itself had passed into the stomach. It is a common trick with conjurers to put a half-crown into the hands of a person, to press it firmly, and then to say to him, "You are sure it is there?" The party says "Yes." In fact, he has the feeling of it, but when he opens his hand it is not there. The sensation made by the pressure on the hand remains a considerable time after the body itself has been removed, especially if the feeling be assisted by the imagination. You get a piece of sand or gravel into the eye; it is taken out directly, but you persist in saying that it is there; for a little inflammation of the eye produces a feeling as if a foreign body were on the conjunctiva. So I thought it might be with this patient, who imagined that she had a bone in the œsophagus which she could not swallow. Under that impression I ordered an opiate blister; and, under its influence, the sensation was, on the next day, very much abated; and, on the following day, was entirely removed. I think that the rapid subsidence of the symptoms under this treatment proved that they depended on an injury inflicted, and not on the foreign body remaining there. I met with a similar case in the following instance:—A maid-servant was supposed to have something sticking in the œsophagus, but, with the largest bougie or probang, nothing could be discovered there. I treated her in the same manner, and, in a day



or two, the sensation was gone, and she was quite well. I suspect that this is not a very uncommon case. A person sends to you, and says that he has swallowed a fish-bone; you cannot find it; in reality, it has passed on; but it has pricked the œsophagus. By leaving such cases alone I have seen instances in which, in a day or two, the sensation has entirely disappeared.

---

## LECTURE XX.

### EXTRACTION OF FOREIGN BODIES. (*Continued.*)

I MENTIONED, at the conclusion of my last lecture, that foreign bodies taken into the mouth not unfrequently stop in the rectum; but they may get into the rectum in other ways. Mr. Thomas was sent for to a gentleman under the following circumstances:—He had been very subject to costive bowels, and he used to make them act by introducing a piece of stick or cane eight or ten inches in length into the rectum, and there he left it, until, irritating the mucous membrane of the intestines, they acted, answering the purpose of an injection. He had been in the habit of doing this for some years, but one day the cane slipped out of his hand, and, to use his own expression, “it was sucked up into the gut.” At first he was ashamed to send for Mr. Thomas, but after it had been there some days, such was the torture that he sent for him in great distress. Mr. Thomas introduced his finger into the rectum, but he could feel nothing. The sphincter muscle gradually relaxed, and he was then able to get in two fingers, and in a few minutes he passed in his whole hand. He then felt the piece of cane sticking obliquely at the upper part of the gut, and he abstracted it without any mischief. There is, in this case, a circumstance of great interest, and one that I believe was first observed by Mr. Thomas, namely, that the sphincter muscle gradually became relaxed under the pressure of the hand, so as to admit not only one finger, but two, and ultimately the whole hand. I have observed the same thing in several cases in which I have had occasion to make an examination, and the knowledge of this fact is very useful, indeed, on certain occasions which occur not only in hospital, but not unfrequently in private practice. I am very glad to have an opportunity of explaining to you the cases to which I allude, because I remember well that when I first met with them in private practice they puzzled me very much, and I shall be glad if you are saved that perplexity which I suffered myself. Persons of the affluent classes, for the most part, attend a great deal to the state of their bowels, and it is necessary that they should all do so. Those who live luxuriant and indolent lives are liable to have their bowels become very torpid, and you may be assured that there is no harm in their constantly attending to their bowels. I have known people belonging to the affluent classes

who have been in the habit of taking medicine almost every day. I know one hearty old gentleman, eighty-six years of age, who can walk round the Regent's-park, who has taken an aloetic pill every night for threescore years. I knew another gentleman, who died at ninety-two, who took either an aloetic or a rhubarb pill for the same length of time, and I could give many other examples. But there are others who do not attend to their bowels; scybalæ form in the colon, they pass on to the rectum, but they are not easily discharged per anum. The softer fæces pass over the scybalæ, other scybalæ descend into the rectum, and the accumulation goes on until at last the rectum becomes completely filled up with a great mass of hardened fæces, as large as the fist, and even larger, so that half a pound or perhaps a pound weight may be collected there. The patient now suffers exceedingly, and he—or perhaps I ought to say she, for it is more common in women than in men—has a desire to go to the water-closet. She goes, great pain is produced, but nothing comes away, the bowels being stopped up with these hardened fæces. The nature of the complaint may be ascertained by introducing the finger into the rectum; you there feel the hard mass of fæces. How is that to be got rid of? By injection? An injection will not act on this large mass. You must first dilate the sphincter muscle by introducing the fingers, and then with the handle of one or two pretty large spoons the whole mass may be extracted. A good nurse can accomplish it very well, if you tell her how. Let her take a couple of dessert-spoons and bring away a little and a little more, and when the rectum is nearly empty, warm water injected two or three times will remove the remainder. Until I was aware how much the sphincter muscle might be dilated, I found it difficult to manage these cases. I used to try to accomplish it by introducing a narrow spoon into the rectum and bringing away a little at a time, but that was a very tedious process.

Foreign bodies may find their way into the urinary organs, and actually into the bladder. There is in the museum of the hospital a preparation of a calculus, which I purchased at the sale of the late Mr. Heaviside's museum. It is a section of a calculus formed upon a hazelnut. It was extracted from the body of a woman by operation, and on cutting through the calculus the hazelnut was found in the centre. There was no history of the case, but it is evident that the woman, playing some foolish trick with herself, had forced the hazelnut through the urethra into the bladder. Mr. Thomas gives an account of a case in which he extracted a silver toothpick from the bladder. A woman had some difficulty in making water—probably an hysterical difficulty—she introduced the toothpick into the urethra, and it slipped back into the bladder. Sir A. Cooper cut a woman for what was supposed to be stone in the bladder, and when he removed it, it was found to be a piece of coal which had been thrust up the urethra.

No doubt these things are generally done from that peculiar perversion of mind which you find in very hysterical women; but it is sometimes done as a mere cheat, for the purpose of exciting compas-



sion, and obtaining money from compassionate persons. A woman at Ryde, in the Isle of Wight, consulted Mr. Bloxam, a gentleman educated at this hospital, and who now resides there, for stone in the bladder. He introduced a pair of forceps and removed a stone of a very peculiar kind. By and by she had another, and he removed that. He thought they were very odd-looking stones, and as I happened to be at the Isle of Wight he showed them to me, and told me that the women had then got a third. We examined them, and they were evidently pieces of common lime-stone, that the woman had cut into such a shape that she could push them into the bladder. She found it a good trade, inasmuch as she obtained money from the compassionate ladies of Ryde on account of her sufferings. I brought the stones up to town, and Dr. Prout examined them. Here the stones were really passed into the bladder; but I may take this opportunity of stating, by way of guarding you against what occurs in private practice, and, indeed, in hospital practice, that very frequently people pretend to pass calculi from the bladder which were never there at all. It is often very difficult to understand what motive there can be in women for trying to deceive in this respect. We can only attribute it to that perverted state of mind which I mentioned before, and which frequently amounts to insanity. Mr. Childer long ago—for he has now been dead twenty years—brought me a wafer-box full of what were said to be calculi passed from a young lady's bladder. On looking at them I said, "Calculi! they are bits of brickbat and flint, and nothing else." He replied, "It is true, but there is a singular history belonging to them." He then told me this story:—A young lady, the daughter of a gentleman of fortune, all at once began to bleed, and, as she said, passed these calculi from the bladder. Her father and mother went to stay at the house of a country gentleman, and there she was taken very ill indeed at the water-closet, discharged a great quantity of blood, and produced an immense quantity of calculi, which she said came from the bladder; but they were examined very carefully, and found to be just what I have stated. I might mention many circumstances of the same kind. Among poorer people it is sometimes done for the sake of exciting compassion. A woman produced her little boy who was said to pass stones from the bladder. They were sent to me to examine, and I found that they were nothing but pebbles and flint. It was evidently a trick to get money from compassionate ladies, and in which she was successful.

But foreign substances find their way into the urinary organs of the male as well as the female. A man came here with symptoms of stone, but on passing the sound the stone was felt anterior to the bladder. Sir Everard Home cut him for the stone, and brought out one that was narrow, but two or three inches in length. On making a section it was found to be formed on a flower-stalk. The history of the case was this:—The man was a gardener in the country; he had a stricture of the urethra, there was difficulty in making water, and occasionally he used to pass a flower-stalk as a bougie and relieve himself. One day the flower-stalk broke, it remained in, and formed the nucleus of a stone, half in the bladder and half in the

urethra. I operated on a young man for stone in the bladder, and on cutting through the stone there was a large piece of common wax in the centre. The preparation, I believe, is in the museum. This was a very foolish young man, as you may suppose, who happened unluckily for himself, to have a wide urethra, and in some fit of folly he rolled up a piece of wax, introduced it into the urethra, and it gradually found its way back to the bladder. I saw him at the time, and, as I supposed that the wax had gone into the bladder, I recommended him to keep quiet, and let the case be thoroughly investigated. But he was engaged to go to India; he did not suffer inconvenience, as if from the wax in the bladder, though we had a right to conclude it was there, and, contrary to my advice to keep himself quiet, he sailed for India. He came back two years afterwards with a stone in his bladder. A more extraordinary case occurred in the practice of Mr. Keate: I saw the patient with him, and assisted in the operation. A gentleman had symptoms of stone in the bladder, and on cutting into that organ he found that there was no stone, but a great piece of common sealing-wax, of which he drew out several inches in length. This monstrous blockhead—for so I must call him—being tipsy, thought he would pass a bougie for himself. He imagined that wax was wanted for a bougie; he therefore procured the sealing-wax, softened it by the fire, rolled it up in his hands into the shape of a bougie, introduced twelve or thirteen inches through the urethra into the bladder, and there it lay coiled up.

Foreign bodies may get into other parts of the human frame. A musket ball, for instance, may lodge in it for many years, doing no harm. A gentleman of my acquaintance was wounded the day before the battle of Waterloo. There was the hole at which it entered, but none at which it appeared to have escaped, so that it was no doubt lodged within. After a time the wound healed, and he got well. He was a young man, he frequented balls, danced like other people, and felt no inconvenience from the ball. He died several years afterwards of disease of the brain. But at other times musket-balls lodging in the human body may do great mischief. In the museum is a section of a diseased elbow which was amputated here. On sawing through it longitudinally a musket-ball was found in the centre of the bone, which had produced the disease of the joint. But musket-balls, even when lodged in soft parts, do harm in another way. A gentleman was shot in the eyes with small shot, and it produced the most dreadful case of neuralgia that I ever met with. I presume that the shot pressed on the optic nerve. A gentleman had a musket-ball lodge in the leg. It could not be felt, and as it gave him no inconvenience it might be doubted whether it was there or not. By and by it shifted its place, and became more superficial so as to be felt under the skin. Spasm now occurred in the leg, followed by fits resembling those of epilepsy, and to these he was subject while the ball remained in this position. After a time the ball again shifted its place, went back, so that it could not be perceived externally, and then there was an end of the fits and of the other nervous symptoms. I presume that when it first shifted its place it pressed upon some



nerve, and produced the spasm and these fits. Unfortunately, when it was in this situation, and might have been extracted, that course was not pursued; and when it again receded it would have been in vain to attempt it. It was of no use to look for a ball that you could not feel externally.

It is not uncommon for pins and needles to be found lying in the cellular membrane. Sir Charles Bell describes the case of a woman who had an abscess in her chest, from which was extracted a pin some two or three inches in length. It was supposed that the pin had been swallowed, and had made its way out through the œsophagus into the cellular membrane. In other cases it has been supposed that a pin or a needle which has been swallowed, has worked its way through the œsophagus into the chest or neck. But cases sometimes occur in which needles are taken out of human bodies in large numbers. The following case occurred in my practice:—A lady of hysterical habit was unfortunately married to a gentleman who became insane. Once or twice during a paroxysm he very nearly murdered her. What with anxiety about him, and apprehension about herself, her nervous system, which was bad enough to commence with, became much shaken. He died, but she remained in a frightful state,—very weak in health, with constant nervous pain on one side, and subject to what are called fainting fits; in fact, a sort of hysterical catalepsy,—that kind of fit which is produced by animal magnetism working on the imagination of hysterical women, in which the patient appears to be unconscious, but is not so in reality. One day she had with her a paper of needles, containing about fifty, fresh from the place where they were bought. She was by herself, she rang the bell in haste for the servant, and said that she had had one of her fits, and that the needles had run into her leg. This seemed a very odd story. Only eight needles out of the fifty were found left in the paper. It was thought they had got into the footstool. That was unpicked, but nothing was found in it, except a few broken pins. They looked at her leg, and seeing something they did not understand, they sent for a surgeon in the neighbourhood, who found one or two needles pricking under the skin; he opened the skin with a lancet and took them out. In the course of two or three days other needles were discovered; he tried to take them out, but they slipped away, and I was sent for. With some trouble I removed them, and on a subsequent occasion I took out more; altogether we removed about twenty-eight needles from her leg—they were in one leg only. The leg became swollen and œdematous; and, having been in weak health before, she now became still weaker, and sank and died apparently from the mere want of nervous energy. On examining the leg I found several needles still left in it; they were not all taken out, but it would appear that there were just enough to account for those missing.

There are two points in this case to be considered; first, the taking out of the needles which, as a practical question, is of some importance; and, secondly, how the needles got there.

It may appear a very simple thing to extract needles that are stuck

in a woman's leg, but it is not so simple in practice; for every motion of the limb makes the needles shift their situation; and if, in trying to remove them, you make any pressure upon them before you seize them with the forceps, they slip away. No attempt should be made to take needles out of the human body until they are close to the surface, and when you can with a light hand feel one end of them under the skin. You may then venture to puncture the skin with a lancet, and take care to pass, if possible, by the side of the needle, so as not to make pressure upon it. When you see the black point of the needle take hold of it with forceps and extract it. With a light hand you may take out a needle; but if a surgeon be rough, the needle slips away, and extraction is impossible.

But how was it that the needles in the case in question entered the leg? There is only one way of explaining it, namely, that she run them in herself. It is ridiculous to suppose that a paper of needles could run in by themselves. In this state of hysterical catalepsy the patients are not insensible. You know how the girls who are magnetized deceive and cheat. They pretend to read with the back of their head, and prophecy all sorts of stuff, and it is just the same here. This woman was humbugging herself in one way as they do in another. I have no doubt that she run the needles into her leg herself. I can conceive that one needle or two may run in by accident; you may sit down on some needles, and one or two may enter without your being aware of it at the time, but that a whole paper of needles could thus run in I do not believe. When a boy, I read in the "Annual Register" an account of an extraordinary case of a young woman who had swallowed a quantity of needles. The circumstance was forgotten, but years afterwards the needles made their appearance, and they were extracted, some from the arm, some from the breast, and some from other parts. This story was gravely recorded as one of the needles having been swallowed, and then finding their way out of the stomach into different parts of the body many years afterwards. If a quantity of needles passed into the stomach, I should think that they were more likely to do mischief to that organ itself, or to the intestines and peritoneum, than to run separately, and find their way out at the arms and legs. But I cannot understand how a woman could swallow twenty needles. Could you swallow twenty or thirty fish-bones? Certainly not. We know that hysterical women cheat in all manner of ways, and I have no doubt that these women run the needles in themselves. I do not, however, advise you, when called in, to expose such persons; for that is neither a kind nor a right thing to do. I have before said that some of the very best disposed young women will, when under the influence of hysterical disease, play tricks of this description. One young lady who, I believe, when in health, was as good and honest as she could be, puzzled several medical men for a long time by mixing ink with her urine; and there are a number of stories of the same sort.

Foreign bodies may find their way into the trachea, and I shall conclude this lecture with a few observations on that subject.

A foreign body generally finds its way into the trachea in the fol-



lowing manner:—The patient has something in his mouth, he tries to speak just in the act of swallowing it, and in the effort to speak the epiglottis is raised just at the time when it ought to be shut down, and the morsel gets into the glottis. If it be large enough to stop the glottis it produces suffocation. It may, however, occasion coughing, and the cough generally brings it up; but at other times, instead of being coughed up, it slips down; that is, although the patient coughs, yet it slips down; and in other instances it slips down before he coughs,—and then you have a foreign body in the trachea.

The foreign bodies that thus enter the trachea may be very numerous and very various; for example, cherry-stones, almonds, pieces of meat, pieces of bone, gold and silver coin; and the effect they produce differs according to a variety of circumstances, according to their shape, and their particular position. The foreign body may be so large that it descends to the bifurcation of the trachea, and it will not go down farther. It may be so large that it nearly fills up the diameter of the trachea, but that is not often the case, for a body that is small enough to go through the glottis will seldom be of sufficient size to fill up the trachea. Besides that, if it be broad it seldom lays directly flat across, but obliquely, and then there is a space on each side. Again, it may be very light, so that it rises up at every attempt to cough; or it may be very ponderous, so that it remains always at the most depending part. It may be small enough to pass down into one of the subdivisions of the trachea, and if it do, it generally passes into the right bronchus, because that is the wider, and lies more nearly in a line with the trachea than the left. Supposing the body to be light, such as a cherry-stone or an almond, and smooth, and being smooth, movable, it may lie at the bottom of the trachea, and the patient experience no inconvenience from it until a fit of coughing is excited. Several instances have occurred in which a small foreign body has been coughed up again through the glottis; and in other cases, being raised by the act of coughing, it has stuck in the glottis, strangled the patient, and produced instant death. But supposing that, without being very ponderous, it is of a large irregular shape, with sharp edges, and is lying across the trachea, with the corners stuck in one part of that passage, or of the bronchus; then it does not occasion at first much difficulty of breathing; for very probably there is sufficient space for the air to pass by its sides. But, being in the trachea, it brings on inflammation in the mucous membrane, attended with a great secretion of mucus; and this viscid mucus stops up that part of the opening of the trachea which is not blocked up by the foreign body, so that the tube becomes completely obstructed, and the patient dies of suffocation. This is another way in which it may prove fatal.

But supposing the foreign body to be composed of metal; that being a heavy substance, it will keep at the bottom of the trachea if it be of large size, or if small, it will descend into the bronchus. Generally speaking it passes into the latter situation; for a metal body that is small enough to go through the aperture of the glottis will

usually be small enough to be carried by its own weight to the bottom of the bronchus.

Another question arises here. What will happen when a ponderous body—a coin or other metallic substance—lodges in the bronchus? It will not cause great difficulty of breathing; for generally it is small enough not completely to obstruct that bronchus, or, at any rate, the patient can breathe with the other. It may occasion coughing, and if the patient invert himself so as to bring the head downward and elevate the chest, it will run down to the glottis and threaten suffocation. But the patient is in no danger of suffocation if he do not put himself into a position which, not being a natural one, it is not likely that he will do. It may, therefore, remain lodged there for a long time; but what will happen at last? It will give rise to disease of the lungs. A man swallowed a Louis-d'or, which got into the trachea; he died three or four years afterwards, and on examination there was found disease of the lung, the Louis-d'or being in an abscess. This case is recorded in the "Memoirs of the French Academy of Surgery." A boy got a sixpence into the trachea; he was sent to Guy's Hospital, where it was found that his lungs were diseased, and therefore Mr. Key refused to make any attempt to remove the sixpence. A boy swallowed a tin tack; when I saw him he was expectorating pus, so that it had formed an abscess, and it was doubtful whether the tin tack was there or not. By and by he coughed up the tin tack, and the discharge of pus ceased, and the patient recovered.

Foreign bodies are very frequently coughed up, and it has been proposed to endeavour to expel them by making the patient cough. No doubt you can make the patient cough, and there is a chance of the foreign body being thus removed; certainly, if it is to be got rid of by natural efforts, it must be by coughing. Some have proposed to bring up the foreign body by giving the patient an emetic, but I apprehend that it would be useless. In the act of vomiting there is a deep inspiration, not a forcible expiration; the diaphragm descends in order to press on the stomach, and, combining with the action of the abdominal muscles, it expels the contents of that organ. After vomiting is over there is no convulsive coughing, so that the diaphragm gradually returns to its own place. The idea of exhibiting an emetic is founded altogether on a wrong physiological notion; and I think it is dangerous to trust to the act of coughing for bringing up the foreign body. It is very true that it may be coughed up through the glottis; but it may stick in the glottis, and then the patient would die.

Now, what is the best rule to follow? If you are satisfied that the foreign body is in the trachea, I believe that the proper course to pursue is not to trust to nature, she may manage it, but you are not certain of it, and in a great number of cases where it is left to nature the patient dies. Make an opening in the trachea, and I believe that it is best to make it low down. You may proceed here as leisurely as you please, for the patient is not in danger of instant suffocation. Take up every vessel as you proceed, and separate the parts as much



as you can with a director, instead of cutting them, so as to avoid hemorrhage. If you open the trachea when bleeding is going on, every time the patient inspires, blood is drawn into the trachea, and the patient may be suffocated by the surgeon opening the trachea too hastily, and allowing it to become filled with blood. I know a case in which a surgeon performed tracheotomy, and the patient died almost directly. On examining the body, as I am informed, the trachea and bronchi were full of blood. Make the opening, then, as leisurely as you please; separate the parts by a blunt instrument rather than a knife; divide three or four rings of the trachea longitudinally, but there is no occasion to remove any portion of the trachea. What will now occur? When you have divided the trachea, if it be a light and movable body, such as a cherry or tamarind-stone, as soon as you have made the opening, if you hold back the edges, cough comes on, the foreign body is thrown up, and escapes by the artificial opening; or even if it do not escape there, the danger of suffocation, in consequence of its sticking in the glottis, is prevented. But if the foreign body be a bone or any rough substance that is stuck in the trachea, and not movable, then you may introduce the forceps and remove it; and I can conceive of cases in which it is right to take a foreign body from the bronchus. I advise you, however, never to attempt the latter if you can effect the object in any other way. The introduction of forceps into the bronchus will occasion violent coughing, great irritation, and it is a frightful thing to introduce these instruments into the bronchus when the patient is agitated by a convulsive cough. Only conceive of the important organs in the neighbourhood. The lungs are below, and you may injure them, or you may take hold of one of the subdivisions of the bronchi instead of the foreign body. There is the pulmonic plexus of nerves behind; you are close to the phrenic nerves; you are not far from the great vessels of the heart; and the heart itself is close by. Think of the mischief you may do by poking among these important organs with forceps when the patient is agitated by a convulsive cough. Still, if there be a piece of bone stuck across the bronchus, it may be the only way of taking it out. But it does not often happen that any ragged body will go into the bronchus; if, however, it do, you may have to introduce the forceps five or six inches from the part where you make the wound externally.

But suppose a case in which there is a loose and ponderous body in the bronchus. In the case of Mr. Brunel, which occurred last year, there was a half-sovereign in the right bronchus. This gentleman, in playing with a child, flung a half-sovereign into his mouth, and it slipped down the windpipe. In the first instance it produced sickness, and as he drew his breath, previously to vomiting, it descended into the bronchus and occasioned coughing every now and then. When his head was placed down it could be felt rolling along the trachea. We attempted to remove it by placing him on a movable platform, so that his feet were up and his head down nearly at right angles. The half-sovereign descended and stuck in the glottis so as nearly to choke him. We therefore determined not to repeat this

experiment till we had got an opening in the trachea which would act as a safety-valve. We made an opening some few days afterwards below the thyroid gland, but the half-sovereign was not coughed up as a cherry-stone would have been, because it was too heavy. We made some attempts to use the forceps, but found it so dangerous that we desisted. When he had recovered from the effects of this operation,—in the mean time passing a probe every now and then,—we again placed him on a movable platform, his back was struck with the hand, and the half-sovereign escaped from the bronchus. He could feel it rolling along the trachea, till it came to the glottis, and now, instead of sticking there, it passed through, just as you could roll it through the dead body, and came out of the mouth. There was no spasm of the glottis, and the absence of it was to be attributed to the opening in the trachea; for blood came out with the half-sovereign, which had evidently passed in from the external wound, and where blood went in you may be sure that the air went in also. I apprehend the rule to be this:—In all cases where a foreign body has got into the trachea you must not trust to nature, but make an opening into the trachea; and then it is very likely that if the body be light, it will be forced through the opening; or if, by its own weight, it can be made to assume a certain position, it will pass out through the glottis; or, if it be a rough, irregular substance, and sticks in the trachea, you may then, through the artificial opening, seize it with the forceps and extract it. But I advise you to be very careful how you use the forceps, except where the foreign body is actually in the trachea; cases may occur in which you must use them in the bronchus, but it must be done with the greatest possible caution.

---

## LECTURE XXI.

### FISTULA IN ANO.

I PRESUME that you are all aware of the fact that abscesses are very liable to form in the vicinity of the rectum, and that when so formed, they heal only with considerable difficulty, and, for the most part, do not heal spontaneously. You are also aware that the parietes of those abscesses contract, and become hard and callous, in which stage the disease takes the name of *fistula in ano*.

Now, this affection, although of frequent occurrence in hospital practice, is much more common in private practice, and, therefore, it is, in every point of view, a disease of great interest to the surgeon.

The first question that presents itself is this—Why is it that abscesses are so particularly liable to form in the situation in question, and that when so formed they do not heal like abscesses occurring in other parts of the cellular membrane? I formerly supposed that the



healing process was prevented chiefly by the irregular action of the sphincter and levator ani muscles. Further consideration, however, and more mature experience, have led me to the conclusion that this opinion was incorrect. That such causes may interfere with the healing of any abscess I well know, but I am now fully satisfied that they will not afford sufficient explanation why it so rarely happens that abscesses near the rectum heal spontaneously, and, at any rate, it is quite clear that the action of these muscles will not explain the formation of these abscesses. In order to explain their formation I must call attention to what happens in other parts of the intestinal canal. The mucous membrane, under a variety of circumstances, is liable to ulcerate. In patients who die from diseased liver, or phthisis pulmonalis, or at the end of continued fever, and various other diseases, you find the mucous membrane of the bowels ulcerated. This ulceration seldom extends further, does not involve the muscular tunic, but sometimes the latter is affected, and then some of the contents of the intestines escape. Should this occur where the intestine is covered by the peritoneum the contents may escape into the peritoneal cavity. For example, there was a little boy, seven years of age, who had symptoms of mesenteric disease, and who had just recovered from what was supposed to be a fever. When he appeared to be convalescent he was suddenly seized one evening with what was called a fainting fit, in which his pulse was not perceptible. After some time, under the influence of a stimulant, he recovered; nevertheless, he continued low and depressed. On the following day he had another attack of the same kind, from which he did not rally, and on examining the body after death I found that there was ulceration on the inner surface of the ileum, and that the mesenteric glands were diseased. In one place the ulcer had extended by a small opening through the muscular tunic, and also through the peritoneum, and a small quantity of the feculent matter had escaped into the cavity of the belly. Every person who has had much experience of disease has seen cases of the same kind; but there are others in which both the muscular tunic and the peritoneal coat ulcerate, and yet the contents of the intestine do not escape into the cavity. Adhesions take place round the ulcerated spot before the ulceration of the peritoneal coat is completed, and these adhesions cause the contents to escape, not into the peritoneal cavity, but to become infiltrated into the cellular membrane of some part of the abdominal parietes. A young man, of seventeen or eighteen years of age, who had long been in ill-health from disease of the lungs, and who was indisposed in other ways, was supposed to be rather better than usual, but one evening he was seized with violent pain in one side, and there was considerable tenderness of the whole of the abdomen. Two physicians were sent for; the symptoms were not exactly those of peritoneal inflammation, but they could not explain the symptoms so well in any other way as by assuming that he laboured under peritoneal inflammation. The inflammatory symptoms subsided, and two or three months afterwards I was called in to see him on account of a tumour which had formed in the front of the belly. It was an ab-

cess; I opened it, and there came out pus, and with it a good deal of foreign matter, which I was satisfied must have come from the intestinal canal. The abscess made its way in several other places, and ultimately this young man died. On examining the body after death it was found that there were ulcerations at the lower part of the ileum; one of these ulcers had extended through the muscles and peritoneal tunics, but around that ulcer the ileum had contracted adhesions to the abdominal parietes above the groin, and the matter had escaped into the cellular membrane between the layers of the abdominal muscles, and from thence had made its way forward to the part where I opened it. This patient died, but it is not a matter of course that, under such circumstances, such should be the result. I was called in to see a little boy who had been supposed to labour under mesenteric disease, and I found that there was an abscess near the umbilicus, discharging pus and feculent matter. We attended to his general health, kept him in a recumbent position, lying on his back, which, I apprehend was the most essential part of the treatment. Some very simple dressing was applied to the opening; and the boy ultimately recovered. I do not know whether he is still alive, but he was alive two or three years afterwards. I saw another case of the same kind, and I know that the boy lived a considerable time, but as he was taken away from London I cannot tell whether he ultimately recovered or not.

That part of the intestine in which ulceration of this kind is most likely to take place, is the lower part of the ileum, but it not unfrequently occurs in the cæcum. Abscesses in the right iliac region generally belong to the cæcum. A young man, on jumping from a coach felt something, as he said, give way in the right groin, and he came to London with a tumour in that situation. I thought that there was a deep-seated gland which was suppurating, and recommended him to go home, to keep quiet, and to poultice the tumour. A month after he had jumped from the coach he sent to say that the abscess had burst. There was a discharge of pus from it, but it was of a very offensive character, and on examining it carefully I was satisfied that there were fæces mixed with it. He had no bad symptoms at first, and being a very nervous man I did not tell him the exact nature of the case lest it should alarm him. Two or three days afterwards he took some medicine, and a draught of decoction of bark. A short time after, to his horror, the decoction of bark ran from the groin and frightened him out of his wits. From that moment his nervous system began to give way, he became in a state of great nervous excitement, and died ten days after the bursting of the abscess.

On a post-mortem examination I found an ulcerated opening of the cæcum; the fæces had escaped through it into the cellular membrane at the posterior part of the cæcum, and formed an abscess, which burst into the groin. There was a woman in this hospital, with an abscess in the groin, and we supposed it to be connected with dead bone, which is the case with a great number of chronic abscesses. Perhaps sufficient attention was not paid to the quality of the discharge; but one day the woman, in taking off a poultice,



found in it a lumbricus. She ultimately died, and on examining the body after death we found an ulcerated opening of the cæcum through which this intestinal worm had made its way. It was evident that the ulcerated opening of the cæcum, which was at the posterior part, had been the beginning of the abscess. Though these cases are not exceedingly rare, I mention them, because stating specific cases will often impress an important fact on the mind much more than a general observation.

I believe that this is the way in which fistulæ in ano are always formed, namely, the disease is originally an ulcer of the mucous membrane of the bowel, extending through the muscular tunic into the cellular membrane external to the intestine; and I will state my reasons for entertaining this opinion. The matter is one of great interest as a question of pathology, but it is one of great importance, as I shall show by and by, in connection with surgical practice. It is admitted by every one that in the greater number of cases of fistulæ in ano there is an inner opening to the gut as well as the outer opening; and I am satisfied that the inner opening always exists, because I scarcely ever fail to find it, now that I look for it in the proper place and seek it carefully. I have, in a dead body, examined the parts where fistulæ had existed several times, and in every instance I have found an inner opening to it. This affords a very reasonable explanation of the formation of these abscesses; it is almost impossible to understand, on any other ground, why suppuration should take place in the vicinity of the rectum more than in any other part of the body, and why the cellular membrane there should suppurate more than cellular membrane elsewhere. Moreover, the pus contained in an abscess near the rectum scarcely ever presents the appearance of laudable pus,—it is always dirty-coloured and offensive to the smell,—sometimes highly offensive, and occasionally you find feculent matter in it quite distinct. There is no reason why an abscess simply formed in the cellular membrane should smell of sulphuretted hydrogen; but there is a good reason why it should do so if it be connected with the rectum.

This being the case, it is easy to understand why these abscesses do not heal. The least quantity of mucus even from the gut, or of feculent matter, issuing into the cavity of the abscess, is sufficient to occasion irritation and prevent it healing, and I have more than once, in the living person, been able to trace the progress of the formation of one of these abscesses. For example, I was sent for to see a lady who complained of some irritation about the rectum, and on examining it I found an ulcer at the posterior part. I ordered her to take Ward's paste,—*confec. piperis nigrum*, or cubeb's pepper, I forget which. A month afterwards she again sent for me, and I found that there was an abscess. I opened it, and from the outer opening the probe passed into the gut through the ulcer which had been the original cause of the disease. The original opening of the abscess is generally very small indeed, but occasionally it is large, and when the ulceration has proceeded to some extent, large enough to admit the end of the little finger. The inner orifice is, I believe, always

situated immediately above the sphincter muscle, just the part where the fæces are liable to be stopped, and where an ulcer is most likely to extend through both the tunics.

I believe that the most common cause of abscess of this kind is, the lodgment of hard fæces in the bowels; by the straining that takes place to expel them, the mucous membrane gets torn or abraded at one part, and then the passage of the fæces causes ulceration. Some time afterwards straining again occurs, and then the muscular tunic gives way, and the fæces escape into the cellular texture. Foreign bodies, however, in the rectum, sometimes cause abscesses. I mentioned two cases in my last lecture, but I shall mention them again. I mentioned them before because they particularly appertained to the subject we were then discussing. I was called in by a gentleman who complained of great irritation about the rectum. I thought that he laboured under internal piles, but the next day he complained still more, and on examination of the rectum I found a hard substance sticking in the membrane. It was a piece of apple-core which he had swallowed the day before, and if it had not been extracted it would have occasioned ulceration, some of the fæces would have been pressed through the opening, and in all probability the apple-core would have been found in the cavity of the abscess. I was sent for to see another gentleman who was exceedingly ill with a large abscess in front of the anus. He had a brown or rather a black tongue, and bad typhoid symptoms. I opened the abscess freely, let out a quantity of putrid offensive matter, and, on introducing my finger into the abscess, I found a long fish-bone sticking across, with one end in the gut and the other in the abscess. He had swallowed the bone, it had stuck in the bowel, and a little of the fæces escaping by the side made a putrid abscess. Patients with disease of the liver, disease of the lungs, and in certain states of ill-health, are especially liable to abscess and fistula of the rectum. The reason is this: persons thus affected are peculiarly liable to ulcer of the mucous membrane; one of the mucous glandules is attacked, and being very thin it gives way under the straining that takes place to expel the fæces, and fæces escape through the opening.

The first formation of an abscess about the rectum is not in general attended with very urgent symptoms. The patient has a sense of bearing down, a fulness and weight; he thinks that he has got piles, he puts his hand by the side of the anus, and finds a little hardness. After a time it increases, the parts become tender; there is pain when he passes his evacuations; perhaps some difficulty in passing them; by and by the pain becomes still greater, the skin inflames, the abscess, if left to itself, bursts, and a quantity of matter is discharged, which matter is almost invariably offensive, dark-coloured, and putrid. The disease sometimes forms so insidiously that the patient is not cognizant of it till the abscess has burst. Twenty years ago a physician in large practice in London felt very ill, languid, listless, and unfit for business; and in the middle of the day, in consequence of headache and an incapability of exertion, wanted to go home and lie down for an hour before he could finish seeing his pa-



tients. One afternoon, intending to walk home, he had sent away his carriage. He found something give way, burst into his small-clothes, and on his return he found that it was a putrid abscess—a fistula. He went through an operation for it, and got well.

While these abscesses are forming there is sometimes little or no constitutional disturbance; but in other instances there is a great deal of it, and I believe that it depends chiefly on the quality of the pus, and that, again, on the size of the opening. If the opening be pretty large, and a considerable quantity of feculent matter escapes, the pus is then of a very putrid quality, and the more putrid its character the more offensive it is to the smell, and the more poisonous it is to the patient's system; for as it is more offensive to the smell so it is more loaded with sulphuretted hydrogen. Such a collection of putrid matter sometimes produces very urgent symptoms. I was sent for to see an elderly gentleman in the neighbourhood of London with the late Dr. Blickham. I will not say that on my arrival the patient was in *articulo mortis*, but he looked as if he had not long to live—I should say hardly twenty-four hours. On inquiring into the history of the case I ascertained that he had a fistula by the side of the rectum. He had suffered under it for many years; for being afraid of an operation he had let it go on. The external orifice occasionally closed for a time, but in a few days it opened again, and gave exit to the matter. Two or three months, however, prior to the time of which I am speaking, the outer orifice had closed, and there had been no discharge, and at first no inconvenience had been felt. By and by there was a sense of pressure, a bearing down of the rectum, and the patient became very much out of health. At last typhoid symptoms supervened, and he appeared, as I have said, almost dying. I examined the parts externally, and saw that the orifice of the fistula had cicatrized. I then introduced my finger into the gut above the sphincter muscle, and I could feel an immense tumour on one side, which was evidently a large collection of matter. With the forefinger of one hand in the rectum, with the other I ran in a lancet up to the point where the matter was collected. Not only the shoulders but the whole blade of the lancet was buried before matter escaped, and then there was a little putrid discharge. With a probe-pointed bistoury I dilated the opening, and there came away a pint of such putrid matter that the whole house was poisoned by it; it could be smelt almost as bad as if a nightman had emptied his cart into it. The patient was better directly; though the incision was large there was no bleeding, and he recovered without a bad symptom. This circumstance took place many years ago, and he died lately of another complaint.

I have stated that the inner orifice of the abscess is always just above the sphincter muscle, and it may be that the abscess extends no higher than this. But in a great number of cases it does extend higher up—sometimes one inch, sometimes two; nay, I have sometimes found a probe pass four or five inches up the pelvis into a large cavity beside the rectum. These are cases of some interest, respecting which I shall have to speak to you again presently.

The external orifice of the abscess is generally in the skin, a little distance from the anus. Sometimes it seems to pass through the substance of the sphincter muscle, and on other occasions it opens externally to it. The abscess may burrow, and may be two or three inches away from the anus.

In some cases there is no external opening at all, and that may happen in two ways. I saw a gentleman who had an ulcer at the posterior part of the rectum as broad as a fourpenny piece. Some time afterwards I saw him again, and there was then a considerable discharge from the rectum, but no external opening. I introduced my finger into the rectum, and found that this broad ulcer had made a large cavity, in which matter was lodged, by the rectum. The sinus was so large that the matter had found its way out by the gut, and therefore did not burrow so as to make an external opening. But in other cases there is no external, while there are two internal openings, and they are found in the following manner:—There is a small opening through which the pus and fæces were originally infiltrated into the cellular membrane, and then the matter having collected near the gut, bursts into it, and makes a free opening in the neighbourhood of the first lesion. On examining the patient you find a discharge of pus from the inside of the rectum, and on introducing the finger you find distinctly the opening through which the abscess has burst into the rectum. This is what is commonly called blind fistula. The discharge in these cases is seldom quite constant; for the opening made by the bursting of the abscess into the rectum is not so large but what it sometimes contracts, and there not being a free discharge the matter collects, and you may feel it through the skin near the anus. This is important with regard to the treatment, as I shall explain hereafter. At other times the orifice allows the matter to escape by the rectum, and then the external tumour disappears.

In some cases there is a simple abscess and a simple sinus; but in other instances the disease is very complicated. The matter does not easily get to the surface, and it burrows in different directions; there is a sinus in this direction, and a sinus in that; sometimes it extends even to the middle of the nates, and there may be a sinus on both sides of the rectum. In these cases, where there are several sinuses, and where the disease is rendered complicated from the burrowing of the matter, it sometimes happens that there are two internal openings; but in general, however complicated the case may be, there is only one internal opening, and that communicates directly with one sinus, and indirectly with another. It is of great consequence to bear this in mind as connected with the surgical treatment. Where there are several sinuses, burrowing in different directions, the patient always experiences some degree of inconvenience. The matter lodges in one place, not in another, but wherever it lodges it occasions pain, there is an attack of shivering, and then the matter escapes. It then lodges in another place, there is another attack of shivering, and in these complicated cases the patient is continually suffering local pain and tenderness, and these are combined with constitutional disturbance.



I now come to consider the treatment of these cases. Why is it that the abscess does not heal? It may, as I supposed formerly, partly arise from the unfavourable locality for healing, in consequence of the muscular fibres of the parts being always in motion. The levator muscle and the sphincter ani are constantly drawing the parts asunder, so that they are not allowed to contract, but that is not a sufficient explanation. There is an internal opening to the abscess, and now and then a little bit of fæces or mucus will become infiltrated, and get into the cavity. That which produced the abscess originally is going on still. If you could get the inner orifice to close, the patient would soon recover. This does sometimes take place. I saw a patient who had an abscess by the side of the rectum, and to whom I recommended an operation, but for some reason or other he wished to put it off. He went about for a considerable time with this abscess, and when I saw him again the abscess was closed, and had been closed so long, and on a careful examination the parts seemed so sound, that I had no doubt that the inner orifice had healed spontaneously; the escape of feculent matter was thereby prevented, and all the parts granulated and contracted like an abscess elsewhere. The medicine which we now call *confectio. piperis nigri* was originally a quack medicine known by the name of Ward's paste. It is composed chiefly of black pepper and elecampane, and it had the reputation of curing fistula. I believe that it sometimes did so. It is very useful in the case of piles, and where there is an ulcer of the rectum unconnected with fistula. The black pepper mixes with the fæces, it passes down the canal, and becomes a stimulant to the mucous membrane. In this point of view it is useful to persons that suffer from disease of the mucous membrane after dysentery, or who have disease of the rectum. As it will cure piles and an ulcer of the rectum, so no doubt it will sometimes cure fistula. If the little ulcerated opening can be made to contract and cicatrize there is no reason why the external abscess should not heal. But you cannot depend on such a mode of treatment as this; it may or it may not happen to cure the patient, and for one instance in which it effects a cure it fails a great number of times. The disease, however, may generally be cured by a very simple operation, and in speaking of the operation we will take the simplest case first. We will assume that there is a fistula just by the side of the sphincter muscle and only one sinus. The first thing to be done is to find the inner opening. I do not say that you will always succeed in finding it—certainly not the first time, but you will rarely fail if you look for it in the right place. Formerly, I often failed, and for this reason,—I did not know where to look for it. I used to think that it was to be found in the upper part of the sinus, but it is never found there if the sinus runs high up. You must search for it immediately above the sphincter muscle. Another circumstance that makes it difficult to find is this:—The common probe being quite round, turns round in the hand; you want a probe of a much broader kind, so that the least motion of the hand turns the point another way. For this operation I use the probe I now show you, made by Philip and Wicker, in St. James's-street. First, it has a

flat handle, and that gives you a perfect command of the instrument; secondly, at the extremity it is like a common probe; but you must have probes of different sizes. There is a groove, so that it is both a probe and a director at the same time, and being made of silver it is perfectly pliable.

Now, to find the inner opening, place the patient over a table to the light, with an assistant to hold the legs. You introduce the fourth finger of the right hand into the rectum, remembering that the opening is close to the sphincter muscle. You will feel with the finger some little irregularity, and that is where the opening is probably situated. You are then to introduce this probe into the external opening with the assistance of the finger in the rectum, using no force, and by a careful manipulation feeling first in one direction, and then in another, at last it will almost alone pass through into the rectum. It must be done gently, and a little practice will enable you to find the inner opening. You ascertain when it has passed through the opening by its coming in contact with the finger. If you do not find the opening the first day put off the operation to another day. Occasionally I have tried two or three times before I could discover the opening, but generally, if you have probes of different sizes, it is easily found. Sometimes the opening is very small, and therefore requires a small probe. When you have found the inner opening, and the probe is in contact with your finger, you bend the end and bring it out at the anus. Thus, the part towards the handle is seen projecting from the outer opening, and the other part from the anus, while the parts which are to be divided lie upon the groove of the director. I generally divide the fistula with a pair of curved knife-edged scissors, for they cut better than a bistoury. A bistoury tears, and you may cut your own finger if you use the sharp edge. Introduce the scissors along the groove of the director, and divide the parts that lie between the inner and the outer orifice. There is scarcely any thing to be divided—not above an inch or an inch and quarter, but you divide the greater part of the sphincter muscle.

Having performed this operation, all you have to do is, to prevent the cut edges growing together. You have made it into a sore, some of the fæces go into the sore, but they do not lie and lodge there, and there is nothing to prevent this fistula which is now made into an open sore granulating and healing. All you have to do is to dress the parts very lightly between the cut edges to prevent them growing together, and that must be continued till the cut edges are skinned over. You may then leave the parts alone, and the healing process will go on.

But suppose that the fistula extends high up by the side of the rectum, above the opening, and this fistula is burrowing, what is then to be done? I used to imagine formerly that it was necessary to lay open the whole sinus into the rectum, but it is a frightful operation to lay open so long a sinus. You do not know what vessels you divide. There is seldom much bleeding in dividing the parts between the inner and the outer opening, but if there be much the pressure of the finger and a bit of lint stops it directly. I remember a case where



I divided a fistula some way up by the side of the gut, and the whole canal was filled with blood. It is true the bleeding stopped, and the patient got well, but still he might have died from hemorrhage. The bleeding goes on insidiously; you do not know how to stop it; it is internal, you cannot take up the vessels, and you cannot make pressure in any efficient manner. But I am now satisfied, and have been for a long time, that the division of a fistula which extends above the inner orifice is quite an unnecessary proceeding. Upwards of twenty years ago, when I was first getting into practice, I had a patient with a fistula, which I divided, or, at least, thought I had done it. But one day, when examining it with a probe, I found a sinus running up by the side of the gut for several inches. It seemed as if one side of the rectum was completely dissected from the neighbouring parts, but there was a good opening at the lower part where I had divided the fistula. Not knowing what to do with the case I called in the late Mr. Cline, and observed to him that if I divided it the whole length the patient might die from loss of blood. He said, "You are quite right, but more than that I do not think it is necessary; I would leave it alone." There was a free opening below; the *fæces* could not escape so easily now, and get into the cavity above. I adopted his advice, and the patient got well without any trouble. I have since seen other cases of the same kind. Where there has been a large sinus, connected with a fistula, I have laid open the parts between the inner and the outer orifice,—done nothing more,—and the patient has got well. If a very long sinus, and a very large cavity, heal up without being laid open, *à fortiori*, if there be a small sinus, and a small cavity, that will heal up too.

In the next lecture I shall call attention to the treatment of more complicated cases.

## LECTURE XXII.

### FISTULA IN ANO. (*Continued.*)

I CONCLUDED the last lecture by speaking to you of the mode of performing the operation for fistula in ano where that fistula is of the simplest kind. But I now come to consider what is to be done in a case of fistula attended with some complication.

The external orifice of the fistula is sometimes at a considerable distance from the verge of the anus, perhaps two or three inches, and in some cases it is as far off even as the buttock. You may, if you please, perform the operation in the same manner. You may pass the probe in at the outer orifice along the fistula into the rectum, feel for the end of the probe in the bowel, and then divide the whole. This, however, is a very serious operation, and a very painful one;

you may have considerable hemorrhage, and under any circumstances there is a very large surface that is to be healed by granulation. But the fact is this extensive division of parts is really not necessary, and it may be avoided by proceeding in the following manner:—Introduce what I may call the probe-director through the external and internal orifice of the fistula, in the way I have described, and then feel for the probe at some little distance—we will say three quarters of an inch from the anus. Having felt the probe in that situation, which you may generally do with great ease, with a lancet or double-edged scalpel make an opening through the skin and the adipose substance leading down to the groove of the director. You thus make a new external orifice to the fistula; you then withdraw the probe, pass it into the new orifice you have made, through that into the sinus, and then into the rectum. You then bend the probe, bring out the extremity at the anus, and with a pair of knife-edged scissors, divide the parts that lie over the director, and thus you obtain all that is wanted by a very small division of the soft parts. The fistula is prevented healing by the *fæces* escaping into it from the rectum and lodging in the narrow channel. Without some such cause as this the whole fistula would heal at once. It is true that the external extremity of the fistula remains undivided, but the *fæces* cannot pass into it, and in a very short time it heals spontaneously. The internal part is made an open sore; which must be dressed from the bottom, and it heals in the usual manner.

The matter, however, may have burrowed and made many sinuses—a sinus in one direction, and a sinus in another. Sometimes these complicated sinuses are confined to one side of the gut; in other cases they are formed on both sides of it. Before you proceed to the performance of an operation in these cases you must examine the patient very carefully, and it is very probable that three or four examinations will be required before you can ascertain the exact state of the parts sufficiently to guide you in the operation. Introduce the forefinger of the left hand into the gut; then examine the different sinuses, and ascertain whether there is one or more internal communications with the rectum. It very often happens that where there are several sinuses external to the gut, communicating with each other, there is one that is the original sinus, and which has an opening into the bowel. But sometimes there may be a double communication, and then your business is, if possible, to ascertain which is the original sinus, and to lay that open in the way I have already explained, while the others very often need not be touched at all. If the original sinus be made an open sore the *fæces* will not pass into the secondary sinuses, and there will be nothing to prevent them from healing.

I have stated that very often it is unnecessary to open more than a single sinus, but there are exceptions to that rule; for there may be sinuses in which the matter lodges, and from which the matter that is formed does not freely escape. These sinuses require to be laid open, not for the purpose of preventing the *fæces* lodging in them, but on account of the secretion of the sinus itself, just as sinuses any-



where else, from which matter does not freely escape, may require to be freely opened.

I have already stated that if you conduct your examination carefully, and look for the internal orifice of the fistula in the right place, just immediately above the sphincter muscle, you will scarcely ever fail to find it; that if you do not succeed on the first occasion, you will on the second or third. But sometimes the opening is so small, and the sinus takes such a circuitous course, that even after two or three examinations you cannot find it. This will occur sometimes, not very often, and what is then to be done? Perhaps if you were to delay the operation still longer you might discover it, but the patient grows uneasy and impatient at the cure not being completed, and is anxious for something to be done. You must then do what Mr. Pott recommends to be done on all occasions, and which, though a bad practice on all occasions, is a good one sometimes. An artificial opening must then be made into the gut, and you must use the probe-director, or a common probe-pointed bistoury, just as you please. With the fore-finger of one hand in the rectum, to assist you, you must, with the instrument, whichever you use, perforate the membrane of the gut some way above the sphincter muscle, and then divide the sinus. But this is, after all, a very unsatisfactory way of doing the operation, and you may rest assured that if you make an artificial opening and fail to find the real and original opening, in three cases out of four you will be plagued afterwards. You have made an artificial opening, but the original one remains, and you go on dressing the sore; but there is a little infiltration of fæces and mucus into it that prevents it being healed. When you have to make an artificial opening in the way I have stated I advise you to do something more. Having made the artificial opening, and laid the fistula open into the gut, take a straight probe-pointed bistoury, introduce it into the rectum, turn its cutting edge outward, divide the sphincter muscle, and set that completely at liberty. No large division of parts is necessary for this purpose, but having set the sphincter muscle completely at liberty you will scarcely have any trouble in the healing of the sinus. This is better than merely laying open the sinus, into the gut where you cannot find the internal orifice; but it is not so good as the operation where you can find it, because you have more bleeding, you give the patient more pain, and there is a larger wound to heal. I may, however, take this opportunity of mentioning that, although the bleeding from the division of the sphincter muscle is considerable at the time, yet it is never dangerous, because it is within reach. Probably, you may see the vessel that is divided, and can secure it by a ligature; but if not, a dossil of lint, dipped in a styptic lotion, laid on the part, and kept there by the finger of an assistant for half an hour, will always stop it.

I mentioned in the last lecture two classes of cases in which the fistula has no external orifice. In one of these there is a small internal opening, and the fæces having penetrated the cellular membrane external to the gut, an abscess has been formed which has burst into the rectum by another opening. In these cases, by making pressure

externally, you may generally feel where the matter is lodged. One day the bag is empty, another it is full. Take the opportunity when it is full, and you can feel where it is situated, to make a puncture into it with a lancet, and having so done you reduce it into the state of a common fistula, except that there are two internal openings into it instead of one. You then introduce the probe into the rectum and divide the fistula in the usual manner. You must, if you can, discover both the internal openings, and let them both be included in the incision that you make.

I stated that there was another case in which there was an ulcerated cavity in the neighbourhood of the rectum, having no external communication, and where the orifice was originally not like a pin-hole, as in common cases, but sufficiently large to admit the end of the little finger. The ulcer has gone on until it has made a considerable cavity by the side of the gut, having no external opening; and here you are to proceed in the following manner:—The broad internal opening is always close to the sphincter muscle, and at the back part just opposite to the os coccygis. You must be provided with a probe, bent like the one on the table. The probe is to be passed into the rectum, and then drawn down again, so that the point may enter the ulcerated cavity. The point of the probe is felt under the skin; the skin may be punctured with a lancet, and you then introduce the probe director through the aperture and divide the fistula in the usual manner. [The lecturer illustrated these operations by means of a diagram.]

Now, there is another form of fistula of the rectum that requires very especial notice. I cannot better explain what I mean than by mentioning the following case:—There was a middle-aged lady who had an abscess formed in front of the rectum. I imagine that it arose, in the usual manner, from ulceration of the gut. The abscess burst close by the posterior margin of the vagina, and appeared just like a common fistula. She consulted a surgeon, who inadvertently treated it as such, and laid it open into the gut. But what was the consequence? He divided both the sphincter ani and the sphincter vagina, and the wound never perfectly healed. She was in the condition of a patient with a lacerated perineum, and all the rest of her life was liable to an involuntary discharge of fæces, of course making her life miserable. I saw this case some twenty-five years ago, and it was, as you may suppose, a lesson to me ever afterwards. It is not very often that abscesses of the rectum do burst in this situation; I have only seen a few examples of it, but the case I have mentioned was sufficient to show me that some peculiar mode of treatment was necessary. How is such a case to be treated? I have seen two or three cases of this kind of fistula since, without having an opportunity of following up the treatment, and no such opportunity occurred till last year. A lady consulted me with a fistula communicating with the rectum in front, and opening externally just at the beginning of the vagina. I merely made a free division of the sphincter muscle on both sides so as to set it completely at liberty. I dressed the cut edges of the sphincter muscle, and it was a good while before it



regained its complete usefulness. That was just what I intended. The discharge from the fistula immediately became very much diminished; it continued gradually diminishing, and when I last saw her, which was some few months after the operation, it appeared to me that the fistula was soundly healed. Why is it that the fæces get so readily infiltrated into the internal orifice of the fistula? Because there is an obstruction to their passage occasioned by the sphincter muscle. I divided that muscle, removed that obstruction, and the fæces escaped so easily that they did not get into the internal orifice of the fistula. I was led to adopt this plan of treatment from the course pursued by Mr. Copeland in another case. He says that he was consulted by a lady who had an ulcerated opening between the rectum and the vagina. He divided the sphincter muscle, set it completely at liberty, and after the lapse of some time the recto-vaginal communication was closed, and at last firmly cicatrized.

Having stated how these fistulous sinuses are to be laid open, let me say a few words about the dressing. First of all, if the operation be done in a proper manner, there is very little in general to dress—it is only a narrow sore that remains to be dressed. Do not cram it with lint; all that is necessary is, to put a little lint between the edges to prevent them prematurely healing. The parts about the rectum are very often a little longer in healing, and it may be worth while to dress them with red precipitate ointment. When the parts are beginning to granulate you may hasten their cicatrization, and the formation of new skin, by touching them lightly over with the nitrate of silver. It is very seldom necessary, except in complicated cases, to dress the fistula for any length of time; a few days' dressing is very often quite sufficient. As soon as the cut edges are skinned over, the dressing is hardly necessary, and it will save both you and the patient a good deal of trouble merely to touch the surface of the sore lightly every other day with the nitrate of silver. When the edges are fairly skinned over, the rest will skin over sooner without the dressing than with it. If you cram the part full of lint you occasion the patient a great deal of pain. I am sure that sometimes, from too much lint being crammed in, the matter does not freely escape; it burrows in the cellular membrane, and makes a fresh sinus.

There are some cases in which abscesses occur about the rectum, which may be confounded with that particular disease I have just described, and I shall explain them in order that you may draw the distinction between them. An abscess sometimes forms in an external pile. The patient has an external pile; it inflames and suppurates, and on going to him you find the abscess just on the point of bursting. You open it and let out perhaps a teaspoonful or more of matter, but on passing in a probe it will not go up by the side of the gut. This is a very troublesome sort of abscess, it is very painful, the patient can hardly bear to go to the water-closet, and he has pain in passing the last drops of urine.

The treatment is very simple. You cure it at once radically by snipping off the external pile, abscess and all, with a pair of curved scissors.

The same thing will sometimes happen with an internal pile. The patient has an internal pile, inflammation takes place in it, an abscess forms and bursts externally, and you can pass a probe into the abscess in the inside of the pile. Here, also, the best way is, if the pile be small, to snip it off with a pair of scissors, or if it be not small to tie it with a silk thread round the base, and destroy it by ligature. I may here mention an error into which you will be liable to fall if you be not on your guard against it. When you introduce a probe into an abscess formed in an internal pile it very easily breaks down the slender wall of the abscess, and runs into the cellular substance under the mucous membrane. The cellular tissue offers so little resistance to the probe that it may pass in any number of inches between the mucous membrane and the muscular tunic without your being aware of the circumstance. I remember a case many years ago where a surgeon of great eminence in this town laid open what he thought was a sinus of two or three inches in length into the rectum. I am satisfied, from what I remember of the case and have since seen, that it was an abscess formed in an internal pile, and that what he supposed to be a sinus was neither more nor less than a space he had made himself by running the probe into the loose cellular texture.

It is necessary, in the very great majority of cases, to lay the kind of sinuses to which I have alluded completely open into the rectum; and I presume that it is from the analogy to fistula here that some surgeons have been led to think that this operation was necessary for all kinds of fistulous sinuses. I remember some very good surgeons in this town who used to think it was requisite to open what is termed a fistula in perineo in this manner. There can be no greater error. A fistula in perineo is the same as a fistula in ano, except that it communicates with the urethra behind a stricture, whereas a fistula in ano communicates with the rectum above the sphincter muscle. The fistula in perineo is the result of some of the urine passing in from the urethra, and to lay it open will do no good, for it will not prevent the escape of urine going on. But this may be accomplished by dilating the stricture, and, in nineteen cases out of twenty, all that you have to do is, to dilate the stricture. Generally, by the time the stricture is dilated, the urine, finding a readier passage forward than it does through the ulcerated opening, it will not pass into the latter, and the fistula is usually healed by the time the stricture is dilated. If it be not completely healed by that time you have only to keep the stricture dilated for a considerable period by the introduction of an instrument every day, or every other day, and the fistula in perineo will at last heal. If it be a large opening it will take some months to heal, but still it heals spontaneously. There is only one kind of case in which it is necessary to lay open a fistula in perineo, and that is, where there is a sinus in the perineum into which the urine escapes, but which is so situated that neither the urine nor the matter secreted in the sinus can find egress. If there be a fistula in perineo under these circumstances it may require to be opened.

There are some fistulous sinuses that exist in the groin in connec-



tion with disease in the glands of the groin. Surgeons formerly supposed that these required to be laid open like a fistula in ano. They do require to be opened where matter lodges in them and cannot escape, or, at any rate, a counter-opening will be necessary; for there is no disposition to heal unless the matter escapes as fast as it is secreted; but the mere laying open of the fistula will not cause it to heal, it will only prevent it extending. What hinders the fistula in the groin from healing? The diseased gland at the bottom of it. If you wish the fistula to heal you must destroy the diseased gland, or bring it into a healthy condition. Sometimes it may be necessary to dissect out the gland or to destroy it by a powerful escharotic; but in the greater number of cases, if you attend to the general health, the diseased gland recovers itself; and so soon, and no sooner, will the sinus in the groin heal.

The same observation applies to fistulæ that are connected with dead bone. A fistulous sinus leading down to dead bone does not heal because there is dead bone in the bottom; but if the dead bone comes away then the fistula will heal. It is needless to lay open the fistula to inject stimulating liquors into it, or to do any thing till the dead bone has been removed. All that it is worth while to do is, if matter lodges in it to make a counter-opening by which it may escape.

---

## LECTURE XXIII.

### ON FATTY OR STEATOMATOUS TUMOURS.

THERE are different kinds of fatty tumours, but the most common is the following:—The fat resembles ordinary fat, except that it is rather of a more delicate and of a looser texture, and of lighter colour. It is composed of lobules with very thin membranes between them; and externally there is a thin membranous bag in which the whole mass is contained. This bag has a very loose adhesion to the parts in which it is imbedded, but the adeps which it embraces adheres pretty firmly to it.

These tumours, for the most part, form under the integuments in some part where there is naturally adipose structure. You never find them where there is no adeps originally; as, for instance, in the scrotum, the eyelids, or the internal organs. But wherever natural adipose structure exists there this unnatural morbid growth of adipose substance may take place. The tumour is very often not detected when it is of small size. In some instances it remains stationary, but for the most part, being once formed, it gradually increases in size. It generally begins, the patient knows not why or wherefore; but it occasionally seems to originate in some slight injury of the parts in which it is formed. For example, a gentleman was straining to raise

his arm as high as he could, and he felt a sort of snap in the shoulder, and soon after that a fatty tumour appeared over the deltoid muscle. A lady was making an effort with her arm; something snapped, as she thought, in a part of the shoulder; soon afterwards she consulted me, and I discovered a small adipose tumour.

The diagnosis of a fatty tumour under the skin is generally sufficiently simple. There is a peculiar sensation communicated by the tumour to the fingers, which it is difficult to describe in words, but which, when once felt, you will readily recognize afterwards. Sometimes the tumour is elastic, so that you might almost be led to suspect that it contained fluid, but a little practice will, for the most part, enable you to distinguish better. The tumour is generally pretty well defined, it is not productive of pain, it is not at all tender, and gives the patient no inconvenience, except when it attains a large size, and then it is merely troublesome from its bulk. Sometimes, however, the tumour is not situated in the fat immediately under the skin, but is in some more deep-seated situation. This renders the diagnosis more difficult. I remember a lady who had a tumour at the posterior part of the shoulder, and there were various opinions respecting its nature. No one seemed to be quite positive on the subject. On performing the operation for its removal, the trapezius muscle was found lying over it, some fibres of which being divided, out started a fatty tumour. A lady had a tumour of the breast (I am now speaking of what happened when I was almost a student); she was the wife of a medical man, and she had the opinions of four or five of the leading surgeons of that day. One thought that it was fungus hæmatodes, another believed it to be something else, and another could not say what it was. At last it was decided to cut down on the tumour, and then it was found to be a great mass of fat. It was situated under the gland of the breast, which, being of large size, concealed the tumour completely, and being, as it were, lifted up by it, was made to appear a great deal larger than it was.

When a fatty tumour has a deep-seated origin it will sometimes make its way out from under the muscle, a small portion presenting itself externally, while the rest remains concealed. You are led to think there is a very small tumour, but when you cut down upon it you find it to be a large one. This happened to me last week. A patient consulted me concerning a tumour below the axilla. It seemed to be a small fatty tumour, about the size of half an orange, but I could not get my fingers behind it. It was evident that I could not trace its origin, and when I cut down upon it I found it an enormous tumour proceeding from the axilla. It extended far back, apparently into the space between the scapula and the ribs. In fact it was impossible to dissect out the whole of it, and I was forced to tie a ligature in the middle, and cut off the greater part, leaving the rest.

As a fatty tumour increases in size the skin becomes dilated in proportion. When it is of large size a sort of thick fascia is formed over it—such a fascia as is situated over a large old hydrocele or hernia. In different parts of the fascia there are circular spaces, into which the finger will sink as if it were into the substance of the



tumour. The skin over a fatty tumour very rarely inflames and ulcerates. One might suppose that the pressure of the tumour would produce this effect, but it is not so. I have, however, known inflammation to take place in the substance of the tumour, and an abscess to form in its centre. A very remarkable example of this occurred to me in this hospital. An elderly man was brought in with an enormous fatty tumour on the back weighing many pounds. It had existed a number of years, and hung like a wallet behind. A year or two before he came in inflammation had taken place in the tumour, and an abscess had formed and burst externally. The abscess never healed, but continued to discharge profusely both matter and a sort of oil floating in it. It is worth while for me to mention what happened afterwards in this case. I dissected off the tumour, which was easily done, for it had not a very broad origin, and it was a very slight operation. The wound healed very readily, but when it was nearly closed the patient became very ill. I forget the exact symptoms, but I know that we had none of us any doubt that they arose from the sudden cessation of the profuse discharge of matter and grease from the interior of the tumour. These symptoms, however, subsided, and the patient recovered.

We know of no internal medicine, nor of any local application, that will disperse these tumours, and the only thing to be done is to remove them by the knife. This may be done when the tumour is quite small. I do not, however, generally recommend the operation at this period, first, because the tumour may never increase, and as long as it is small it is of no consequence; and, secondly, because the operation is really more easy when the tumour has attained a certain size. Still, it is better not to let the tumour go to any *very* large size; and for this reason, lest the pressure of the skin should cause it to contract adhesions to the neighbouring parts. Where such adhesions have taken place, the operation is rendered difficult, and you cannot be certain that you do not leave some small portion of it, which may be the nucleus of a future growth. As soon, then, as the tumour becomes large enough to be troublesome from its bulk, then you may dissect it out, and this is a simple operation if you know how to do it, and very difficult otherwise. Make a free incision of the skin, not upon the tumour but into it, cutting fairly into its substance. Do not spare the incision through the skin, but let it extend from one end to the other. Then lay aside your knife, and you will find that with your fingers you can easily separate the cyst that contains the adipose matter from the neighbouring textures, pulling out one lobe after another till at last the tumour remains attached only at one corner, that is at the point at which the vessels run in and out. You have no bleeding in any other part of the operation, but in this last part of it you will generally find one or two arteries which you must secure by ligature. When the tumour is situated under a muscle, the operation is to be performed in the same way, with this exception—that besides laying open the skin, you must freely divide the muscle, cutting across the fibres.

There is another kind of fatty tumour which occurs not very unfre-

quently, but which, so far as I know, is not described in books. It is a deposit of fat, the tumour not being well defined, and there being no distinct boundary to it, so that you cannot say where the natural adipose structure ends, and where the morbid growth begins. I will mention to you one of several cases which I have seen, and which will explain sufficiently what I know of the matter. A man came to this hospital some seventeen or eighteen years ago, with a very odd appearance—an enormous double chin, hanging nearly down to the sternum, and an immense swelling at the back part of the neck—two great tumours as big as oranges sticking out, one behind each ear. The patient stated that these tumours had begun to form three or four years before, and had been gradually increasing in size. They gave him no pain, but they made him miserable, and in fact had ruined him. The poor fellow was a gentleman's servant, and having such a strange grotesque appearance nobody would hire him. I gave him half a drachm of liquor potassæ three times a day, and gradually increased the dose to a drachm. This was taken in small beer. About a month after he began to take it the tumours were sensibly diminished in size. He went on taking the alkali a considerable time, and the tumours continued decreasing. It was just then that iodine began to have a sort of reputation, much beyond what it deserved, for the cure of morbid growths, and I gave him the tincture of iodine. It was curious that while he took the tincture of iodine he lost flesh generally, but the tumours began to grow again. Finding this to be the case, I left off the iodine, and gave him the liquor potassæ a second time. He took an immense quantity altogether, and left the hospital very much improved, being directed to take the medicine for some time longer, off and on. I had lost sight of him for some time, when I happened to be requested to visit a patient in Mortimer-street. I did not observe the servant that opened the door, but as I came down he stopped me in the hall, and said that he wished to thank me for what I had done for him. To my surprise it was this very man. He had gone on taking the caustic alkali for a considerable time, and you may suppose how much he was improved by his being able to get a situation as footman. There were some remains still of the tumours, but nothing that any one would have observed. I have seen some other cases of the same kind, and where I have had the opportunity of giving liquor potassæ it seemed to be of great service. But I have not tried it in every case, and I have been informed that in some other cases it has been tried to a great extent without the same good result.

These tumours feel like fat, but there is no distinct boundary, and they are not so soft and elastic as common fatty tumours. This deposit of fat may take place in any part of the body, but I have seen it more frequently in the neck than elsewhere.

There is another kind of fatty tumour, which also, so far as I know, is not described by writers. A patient comes to you having tumours in different parts of the body, as if there were absorbent glands under the skin. You will find several in the arm, several in the trunk, and perhaps a great number of them altogether. They generally give no



pain, they grow to a certain point, and these do not get larger, but others form somewhere else. They occur in persons apparently healthy in other respects, and are not connected, so far as I have seen, with any other disease. I used to doubt very much what was the nature of these tumours, till at last there being one rather larger than usual in a patient who had several of them, I dissected it out, and it proved to be a fatty tumour; but the fat was of more solid consistence than that belonging to the ordinary fatty tumours, which causes them to give a different feeling to the fingers. They are equally well-defined on the margin. Any one of these tumours that grows to an unusual size may be dissected out without any harm, but there being a great number of them, it would be absurd to think of dissecting them all out. Can any thing be done in the way of medicine? I have given these patients the liquor potassæ in large doses, and certainly in two or three cases with very great benefit. The tumours in one case nearly or quite disappeared under this remedy. I suppose that in those, as well as in the other cases of which I have just spoken, the liquor potassæ acts in this manner; the greasy part of the tumour combines with the alkali, is taken into the circulation, and is thus carried off. It was upon this hypothesis, at any rate, that I was led to give this alkali. Whether it be, or be not, the right explanation, I will not say, but of this I am certain, that the remedy is often a very efficient one. But may the liquor potassæ be taken with safety in such large doses? Indeed it may, if you dilute it sufficiently. You cannot take even half a drachm in two ounces of liquid without its being inconvenient to the stomach, but you may take a drachm and a half in a large quantity of liquid two or three times daily without any harm. The best liquid in which to take liquor potassæ on this and on many other occasions, is fresh small beer. It seems to me to act better in small beer than when it is given in other ways, and the beer does not disagree with the stomach, because the alkali combines with and neutralizes the vinegar which it contains. It is the latter that disagrees with weak stomachs. The alkali and the vinegar together make a diuretic salt, and I suspect that this is advantageous; besides that the alkali is less ungrateful to the taste when taken in small beer than in any other way. However, there are some persons who really cannot take small beer, even with the alkali; and others, with whom small beer generally disagrees, can hardly be persuaded that an alkali alters its quality. If there be any reason for not giving it in beer, it may be given in milk and water, or clove-tea, or ginger-tea; but then it should be exhibited in smaller doses, because none of the alkali will be neutralized as it is by the acid of the beer. To do real good the alkali must be taken in large doses, and for a long time together—not for weeks, but for months. A patient may take it on and off for a great length of time without any mischievous effects.

There is a very remarkable kind of fatty tumour that sometimes occurs, though it is a very rare disease indeed. It is of rather firmer consistency than an ordinary fatty tumour, and perhaps there are two or three or more in different parts of the body. When you cut

down on it, you find that it is composed of pretty solid fat, and that it is covered with a reflected membrane just as perfect as the peritoneum or the pleura, or any of the reflected membranes of original formation. There is one layer of membrane covering the tumour itself, and then another which forms a loose bag round it; and there is a space between the two membranes filled with a halitus, so that they do not adhere. These tumours are troublesome to remove, because you must remove not merely the tumour itself, but the reflected membrane. How you are to distinguish these cases from other tumours I cannot tell; you can only make out the nature of the case when you have cut down on the tumour.

There is a tumour that occurs in the female breast, which Sir Astley Cooper has called the chronic mammary tumour. It is not a very good name, but no other has been given to it. This tumour is of a peculiar structure, in general lobulated; and when you examine one lobule, you find it is made up of smaller lobules, adhering to each other by loose cellular texture. What is the peculiar appearance which it presents under the microscope I do not know, but by the naked eye it is easily distinguished from malignant and other tumours of the breast. It occurs for the most part in young women, and there is reason to believe that sometimes it disappears spontaneously. I was called to see a young lady some years ago, who had a tumour on one side of the breast; and I thought that the disease was of this description. I recommended her, as it was of some size, to have it removed by an operation. I cut down upon the tumour, and dissected it out, or rather extracted it, which was done very easily in the way which I will mention presently. At the time of the operation it seemed to be not exactly the common chronic mammary tumour, though very like it; but when I examined it afterwards, I found it chiefly composed of fatty substance, but lobulated like a chronic mammary tumour. The wound healed, and there was never any return of the disease. This called my attention to the subject, and since then I have seen other cases, that satisfied me that this chronic mammary tumour has some actual relationship to the fatty tumour, the structure being probably modified by the particular organization of the part in which it is imbedded.

In the case which I have just mentioned, the character of the fatty tumour predominated; but, from the structure of other tumours, it appears as if the two diseases run into one another; and even where the characters of the two tumours are most distinctly marked, there is this point of resemblance between them—the adhesion of them to the neighbouring parts is just of the same kind, and they must be removed in the same manner, namely, by dividing the skin, and turning them out with the fingers, there being generally only one point of the tumour at which there is much adhesion, and that is, where the vessels pass in and out. Then I met with this case, which affords a further proof of the relationship between these two classes of tumours. There was a lady who had an enormous tumour of the breast. I could not say that it felt different from the natural breast, but it seemed as if the breast were grown to a monstrous size. I



called in Sir Astley Cooper, it being a doubtful case, and the patient being a person of considerable consequence; and he agreed with me in thinking that it was more like hypertrophy of the breast than any thing else (for there is such a disease as hypertrophy, that is, an increase of the natural structure of the breast, without any actual change of structure). There was no hurry about it, and we tried pressure and some other remedies without any benefit. The tumour, however, continued to grow, the patient became tired of carrying about the load, and we recommended her to have the breast removed. Sir Astley Cooper was with me at the operation, and we set about it, believing that I should remove the whole breast. But when I came to cut down upon it, I found that the breast itself lay perfectly sound in front, while the tumour lay at the posterior part, between the breast and the pectoral muscle. I dissected out one portion of the tumour, and it had just the appearance of a chronic mammary tumour. Then, as I went on, I came to a mass of fat, which I drew out in the same manner; and then I came to another mass of chronic mammary tumour, but the whole connected together. The entire mass weighed probably two or three pounds. The breast itself was left perfectly sound. When we examined the tumour we found it made up of both structures; at one part there was common fatty tumour, and at another chronic mammary tumour, the one being blended with the other, so that they could not be separated. The patient did perfectly well.

I have said that the skin over a fatty tumour does not readily ulcerate, but that matter may form in the tumour, and then that the skin may become ulcerated secondarily. But Sir Astley Cooper used to say, that he had no doubt a fatty tumour would sometimes alter its structure, take on malignant action, and become a malignant tumour. Whether he had any dissections to prove that I do not know; but I have no doubt that he had seen instances in the living person which sufficiently justified the opinion; and I think the case I am about to mention proves that he was correct. A farmer from the country came to me with what appeared a fatty tumour on the back. It was as big as your two fists put together, and it had existed for a great length of time. There seemed to be no doubt that it was a fatty tumour, yet it was a little more firm in consistence, than fatty tumours usually are. I dissected out the greater part of the tumour; and on examining it afterwards, I found that it was composed of a fatty substance, rather more condensed than usual, but that here and there throughout its substance there was a morbid growth, apparently belonging to the class of medullary or fungoid disease. It is reasonable to suppose that if the tumour had been allowed to remain, it would have ulcerated and run the course of other malignant tumours.

I have thought it worth while to bring this subject of adipose tumours before you, because I think a good many of the facts which I have mentioned, though of course known to practical surgeons, are not to be found in books, and that it will be useful for you to be taught them, and not to be left to find them out altogether for yourselves.

## LECTURE XXIV.

## ON SERO-CYSTIC TUMOURS OF THE BREAST.

THE disease of which I propose to treat on the present occasion, is an affection of the female breast. It is one of great interest in various ways, and among others in this, that in its more advanced stages it is liable to be confounded with carcinoma, although it is not really of a malignant nature. I should not have been able to trace its exact history if I had trusted altogether to my hospital experience. In private practice it is of frequent occurrence. Yet I have not met with any description of it in books corresponding to what I have myself observed of its actual progress. You will presently see how this is easily to be explained by the disease assuming a wholly new character as it proceeds, so that if you were to look at two cases of it, one in an early, and the other in a more advanced stage, without having witnessed the intermediate changes which have taken place, you would be scarcely able to recognize their identity. Let me not, however, be misunderstood as representing that no notice whatever has been taken of it by surgical writers. The account which Sir Astley Cooper has given of the hydatid breast has been taken principally from cases of this disease, and there are also some allusions to it in the Treatise on Diseases of the Breast, lately published by M. Velpeau.

The first perceptible indication of the disease is a globular tumour imbedded in the glandular structure of the breast, and to a certain extent movable underneath the skin. Sometimes there is only one such tumour; at other times there are two or three, or many more. The examination of the breast in the living person does not enable you to determine the exact number which exists, as it is only when they have attained a certain magnitude that they are perceptible through the skin. In most instances the disease is confined to one breast, though it is by no means very uncommon for both breasts to be similarly affected.

The globular form which the tumour invariably assumes in the first instance is a sufficient proof that it is formed of fluid collected in a cyst, and of course pressing equally in every direction. If you puncture the tumour with a grooved needle, the fluid may be evacuated so as completely to empty the cyst, and the perfect subsidence of it afterwards proves how little space the cyst itself occupies. The fluid is always serous. When the tumour is small it seems to be serum, unmixed with any thing else. In a more advanced stage of the disease, some colouring matter is generally blended with it, and it may be green, or brown, or so dark-coloured as to be almost black. The quantity of fluid of course varies. In dissection, I have found the cyst to be so small as to contain scarcely a single drop.



But it is sometimes capable of containing several ounces. In two cases in each of which I had the opportunity of examining a breast affected with this disease, I found small cysts, composed of a thin membrane, and containing serum, pervading the whole of the glandular structure, the intermediate parts presenting a perfectly healthy and natural appearance, and I could discover nothing more. I am, however, led to suspect that the cysts are originally formed by a dilatation of the lactiferous tubes. In one of the preparations now on the table you will perceive a bristle introduced into the orifice of one of these tubes opening on the nipple, which has passed into a cyst immediately below; and it is not uncommon to find that by pressure on the tumour, the fluid may be made to escape by the nipple, even so as to expel the whole of it.

To complete this history of the disease, as it first shows itself, I may add that the general health is unaffected, and that the patient complains of no pain, unless it be that, in some instances, there are those disagreeable nervous sensations which are apt to arise whenever the attention is anxiously directed to any one part of the body. I have never known the disease to occur previously to the age of puberty, nor after the middle period of life: and, if I am not much mistaken, it is more common in single than in married women.

There are not a few cases in which no morbid changes take place beyond that which I have already described; the cysts remaining unaltered, or only slowly increasing in size during the remainder of the patient's life. But in other cases the tumours lose their globular form, and a solid substance is deposited in the breast, connecting different cysts with each other in one large mass of disease. This process may be going on for many successive years without inducing pain or much inconvenience, except what belongs to the bulk of the tumour. But the period at last arrives when other changes take place, the disease assuming a more formidable and dangerous character. The skin, in some one part, more tense and thin than elsewhere, becomes inflamed and ulcerates; and an intractable and bleeding ulcer is the consequence. Then one of the cysts, more distended than the rest, gives way, discharging its serous contents. Perhaps the opening heals, then again gives way; and this may recur several times, until at last a fungous growth protrudes through the opening. And here the question arises, what is the exact nature of these changes, which, by a slow gradual operation, at last convert a disease so small and simple in its origin, into one so extensive and complicated? This I shall next endeavour to explain; and a series of preparations on the table, with the histories of the cases belonging to them, will enable me to do so.

The first of these is a membranous cyst, which I removed from the breast of a private patient. It is of the size of a large walnut; and you will observe that about one-fourth part of its cavity is occupied by an irregularly shaped excrescence attached to one portion of its internal surface.

Several years ago Mr. Green and myself were present, when Mr. Freeman, of Spring Gardens, removed the breast of a female with a

similar tumour imbedded in it. The tumour was of about the same size as that which I have just shown you; and in my notes of the case I find it stated, that "the cyst contained serum, but that about one-third part of its cavity was occupied by an excrescence which came from one part of its inner surface. The excrescence had the appearance of fibrin which had become vascular."

The history of the patient whose case has furnished us with the next preparation, and the accompanying drawing, is highly interesting, and illustrates many circumstances connected with this disease.

This lady consulted me in the month of October, 1837, respecting a tumour of the breast, which might be compared as to size to a large nutmeg. It was of a globular shape, and evidently contained fluid. I punctured it with a grooved needle, and a yellow serum escaped. There were no other indications of disease. Afterwards I made a free opening into the cyst with a lancet, and, the whole of the fluid having been evacuated, I introduced a piece of lint, with a view to produce inflammation and the formation of granulations on its inner surface, which might obliterate its cavity. An abundant suppuration and a good deal of inconvenience followed this trifling operation. At the end of about two months, although the abscess was not properly closed, the patient believing herself to be nearly well, left London of her own accord. I heard nothing of her from this time until, after the lapse of fifteen months, she again placed herself under my care. In the situation of the cyst which I had laid open there was now a considerable solid tumour, a portion of which, about half the size of an orange, projected through an opening in the skin, forming an irregularly-shaped fungus. There seemed to be no other remedy than that of the removal of the breast by an operation, to which the patient willingly consented; and from which she recovered favourably.

On examining the tumour in its recent state some remains of the original membranous cyst, containing a small quantity of serum, were found at its basis. A large quantity of solid substance projected as an excrescence from the inner surface of the cyst, assuming a peculiar plicated or fimbriated appearance, and a portion of this excrescence protruding through the skin, formed the external fungus. You will see these appearances distinctly visible in the preparation, although not so plainly as before the parts were immersed in alcohol, and they are well represented in this drawing, which is made with Mr. Perry's usual accuracy. The structure of the morbid growth seems to be of the simplest kind. I can compare it to nothing better than fibrin imperfectly organized. Its existence does not seem to be limited to the inside of the cyst, a considerable mass being on the outside, in immediate contact with the gland of the breast. Previously to the operation the remaining part of the breast appeared to be in a healthy condition; but on dissection afterwards I found imbedded in it a great number of membranous cysts, of various sizes, from that of a pea to that of a horse-bean. These cysts contained a transparent yellow serum, and were evidently of the same nature



with the larger cyst which I had formerly punctured, and in which the fungus had originated afterwards.

The preparation which I now show you leads me to the history of a patient, who is still under the care of Mr. Keate, in this Hospital. Fifteen months ago, being then an out-patient, she had a tumour of the left breast, above the nipple, of the size of a walnut. It was globular and movable. Mr. Cutler punctured it with a grooved needle, and ascertained that it contained serum. Soon afterwards it was found that a fluid, similar to that which had escaped by the puncture, was discharged by the nipple. From this time the tumour gradually increased in size. Six weeks ago Mr. Keate repeated the puncture with a needle, giving exit to a large quantity of yellow serum. The tumour, in consequence, was much reduced in size, but it soon enlarged again, so as to exceed its former dimensions. On the 21st of last December, Mr. Keate made an incision into it, and the cyst was now so capacious that not less than half a pint of serum was evacuated by the wound. The serum was now tinged with blood, and a good deal of hemorrhage followed the operation. In the course of a few days a large dark-coloured fungus was seen projecting through the wound. Under these circumstances, on the second of the present month, Mr. Keate amputated the breast, and you may here see the morbid appearances which it presents.

The tumour consists of a large membranous cyst, which might have been capable of containing twelve ounces of fluid, if the greater part of its cavity had not been occupied by a great number of excrescences attached to its inner surface. These excrescences vary in size, the smallest being not bigger than a pea, while one of them is of the size of a small orange. They are covered by a thin membrane, which appears to be continuous with, and a reflection of the inner layer of the cyst. When cut into, these excrescences present the appearance of a considerable variety of structure. Some of them may be compared to recently coagulated albumen not yet organized: others, to imperfectly organized fibrin: some of them have an apparent resemblance to fatty tumours, although I do not find that they actually contain any oily matter, and one of them might, on the first view of it, be almost mistaken for medullary disease.

The tumour which is displayed in the next preparation illustrates a still more advanced stage of the disease. I removed it from the breast of a private patient in the month of November, 1836. It had existed for many years, gradually, but slowly, increasing in size. You perceive that at the time of its removal the tumour was not larger than a small orange, and that it was of an irregular shape. Near the base of the nipple is a membranous cyst, which contained two or three drachms of very dark-coloured serum. Some smaller cysts, which also contained serum, are seen in the neighbourhood, and a bristle introduced at one of the ducts of the nipple has entered one of the cysts by a smaller circular aperture. The seat of the tumour, on a superficial view of it, appears to be one uniform mass of solid substance: but on a more close inspection you find it to consist of a congeries of membranous cysts, the cavities of which are completely filled with

fibrinous matter. In many of the cysts, on examination with a probe, I found this fibrinous matter to have an attachment to one part of the inner surface lying in contact with the lining membrane elsewhere, but having no actual adhesion to it.

We can scarcely doubt that if in this case the operation had been deferred until a later period, the growths of fibrinous matter, by which the cysts were occupied, would have contracted universal adhesions to the membrane with which they lay in contact, and that the whole, with the exception of those cysts which still contained serum, would have been identified in one solid mass of substance, in which the original cellular or cystic structure would have entirely disappeared. Of this last change, the preparation which I now show you, seems to furnish an example. The patient from whom this specimen was taken was under my care in the year 1818. I have no notes of the early history of the case; but the disease had probably been of long duration, as, at the time of my being consulted, the breast had attained an enormous size, being not less than seven pounds in weight. She was a middle-aged person, otherwise in good health, and the skin and the axillary glands were free from disease. Under these circumstances the diseased breast was amputated. The wound healed favourably, and I heard of the patient being alive and well several years afterwards. If you examine the cut surface of the tumour, or rather of that portion of it which is displayed in the preparation, you will see that the greater part of it is one uniform solid mass, of which it is difficult to describe the structure in words, further than by saying, that in some parts it has an indistinct laminated appearance. There are, however, in one part of it, several membranous cysts of various dimensions, which, when first cut into, were found containing serum. One of those is distinguished from the rest by its greater size, being capable of containing several ounces of fluid, but being also occupied by a large excrescence attached to one part of its inner surface, and projecting into its cavity. This excrescence is of an irregular shape, very similar in appearance to some of those which you have seen in the other preparations. In its recent state it seemed to consist of distinct masses of recently coagulated albumen, semi-pellucid, some of a light yellow, others approaching to a purple colour, and altogether bearing no small resemblance to a bunch of white and purple grapes. These peculiar appearances of course, have been destroyed by the immersion in alcohol.

Having explained to you these facts in detail, with a view to impress the subject more completely on your minds, I shall endeavour to trace, in a few words, the pathological history which they seem to establish, and which, not only as a matter of science, but in a practical point of view, it is so important for you to understand. It appears, then, to be as follows:—

First: a greater or less number of membranous cysts are generated in the breast, containing serum. The latter is at first of a light yellow colour, and transparent, but afterwards becomes of a darker colour, and opaque. There is reason to believe that these cysts are formed by a dilatation of portions of some of the lactiferous tubes.



Secondly: morbid growths or excrescences are generated from the inner surface of one or more of these cysts, projecting into their cavities. These excrescences seem to consist of albumen or fibrin, which, after some time, (if not immediately,) becomes organized. They are covered by a thin delicate membrane, which seems to be reflected over them from the inner surface of the cyst; but whether they are originally formed between two layers of the membrane of the cyst, or whether they are at first mere deposits of fibrin or albumen on the inner surface of the cyst, a thin membrane being formed on their surface afterwards, remains to be determined by future observations.

Thirdly: there is some reason for believing that a similar growth of fibrinous substance may take place from the external surface of the cysts connecting different cysts with each other; but this point may perhaps require to be illustrated by further investigations.

Fourthly: under certain circumstances the cysts become completely filled up by the morbid growths, so that their cavities are obliterated, the tumour being thus converted into a solid mass, in which, however, the remains of the cysts are perceptible; and this is the prelude to a still further change, in which the greater part of the cysts have wholly disappeared, a solid mass of an indistinctly laminated texture occupying their place.

Fifthly: if one of the membranous cysts be artificially laid open, or if it burst from over distension with serum, the fibrinous excrescence from its inner surface being no longer restrained by the pressure of the skin, increases in size, and protrudes externally in the form of a fungus, giving to the tumour a new and more formidable character.

In this last stage of the disease, it is evident that spreading ulceration, sloughing, and hemorrhage, the usual results of an ulcer occurring in a diseased structure, must ensue, and that no remedy is likely to be of any service to the patient, except the removal of the affected parts by a surgical operation.

And this leads us to the concluding and most important part of these inquiries. In considering the treatment of these cases, it is convenient to distinguish those in which the disease is still in its earliest stage, presenting itself in the form of a membranous cyst, or cysts, containing serum, from those in which the growth of a solid fibrinous substance has become superadded to this simple original structure.

In the first order of cases we may venture to evacuate the fluid contents of the cyst by penetrating it with a grooved needle. No inconvenience is ever the result of this trifling operation; and it is often useful by assisting us in our diagnosis, and also by enabling us to determine whether any growth of solid matter, in connection with the cyst, has yet taken place. But it is not productive of any permanent benefit, as the fluid is always regenerated in the course of two or three days. I have no experience which would lead me to recommend any further or more considerable operation than this. It is needless to remove what appears to be a solitary cyst, as it is always highly probable that there are other cysts in other parts of the breast co-existent with it, which are not yet sufficiently developed to be

perceptible through the skin; or otherwise, that such cysts will be formed afterwards if they do not exist already. As to the removal of the entire breast, it is, under these circumstances, an unjustifiable proceeding, unless it be in a few cases in which the cyst or cysts have attained so large a size as to be inconvenient from their bulk. The disease, in its early stage causes no suffering, and may remain for years, or for the whole of the patient's life, without advancing farther, and under these circumstances, no harm can possibly arise from delay. Besides: if I am not greatly mistaken, there is a simple and safe mode of treatment which may often be employed with great advantage, and which is not open to those objections to which any severe operation is always liable.

Some years ago, a lady consulted me concerning a small tumour of the breast, near the nipple, and apparently containing fluid. Not at that time knowing anything better, I recommended that it should be removed by the knife. The day was fixed for the operation, but, in the meantime, some domestic circumstance occurred which made it necessary that it should be postponed. Under these circumstances I proposed to the patient that she should make the experiment of applying a stimulating embrocation to the surface of the skin. This accordingly was done, and the result was, that the tumour disappeared. Some time afterwards, another lady consulted me, having a globular tumour of one breast, larger than a pigeon's egg. I punctured it with a grooved needle, and a considerable quantity of serum was drawn off. In a few days, the fluid being re-produced, the tumour, which had wholly disappeared, was as large as ever. I now applied the same treatment as in the former case; and in the course of some weeks the whole of the fluid had become absorbed, and nothing was perceptible, except a slight thickening, apparently formed by the collapsed membrane of the cyst. The thickening disappeared gradually, and when I last saw the patient, three or four years after the time which I have mentioned, there had been no recurrence of the disease. Since these cases occurred, I have had recourse to the same method of treatment in many instances. In some of them the result has been, that the tumour or tumours have entirely disappeared; in others, that without disappearing altogether, they have become very much reduced in size; and it is only in a few instances in which the treatment was not very rigidly pursued, that it has been productive of no manifest advantage.

The application which I have generally made use of on these occasions is the following:—*R.*—*Spiritûs camphorati, Spiritûs tenuioris, ãã ʒiiiss; Liquoris plumbi diacetatis, ʒj. Fiat embrocatio.*

I have directed the patient to soak a piece of flannel in this embrocation, and to apply it so as to cover that part of the breast in which the tumour is situated, renewing the application six or eight times in the day and night until the skin becomes inflamed; then to omit the application for two or three days, but to resume the use of it as soon as the inflammation has subsided. The period of time during which it is necessary to pursue this method of treatment varies in different cases. In some, all that can be desired is accomplished in the course



of three or four weeks; in others, it must be continued, with occasional intermissions for some months. Other stimulating applications may be occasionally substituted for that which I have just mentioned. Several blisters may be applied in succession; each of them being kept open for a few days with the savine cerate; or a solution of  $\text{3j}$  of iodine in  $\text{3j}$  of alcohol may be applied to the skin once or twice daily, by means of a large camel's-hair brush. On the whole, however, I am led to believe, that the embrocation is more efficient than anything else.

But these remedies are of no avail when the growth of solid substance is begun. In this more advanced period of the disease, no good is to be expected except from the removal of the entire breast; and such an operation may be had recourse to with every prospect of success.

The disease seems to be entirely local. It belongs to the breast, and to nothing else. It does not contaminate either the skin or the lymphatic glands; it is not complicated with any corresponding disease of the viscera; and all the experience which I have had justifies the conclusion, that if care be taken that no portion of the breast is allowed to remain, there is no danger of its recurrence.

A careful observer will find little difficulty in distinguishing cases of this disease from those of the other diseases to which the breast is subject. It is, however, desirable, with a view to a more ready and accurate diagnosis, that we should consider what are the diseases with which it is most liable to be confounded. The principal of these are as follows:—

First: a thin membranous cyst, containing a transparent watery fluid, without coagulable matter, is occasionally found in the breast, which may be compared to the membranous cysts, containing pure water, which are sometimes met with in connection with the liver; and of which I have published some cases in one of the medical journals;\* and to the encysted hydrocele of the spermatic cord or testicle. This disease is probably rare, as only two examples of it have fallen under my observation. In one of them the cyst was extracted by an operation; in the other the nature of the fluid having been ascertained by means of a puncture with a grooved needle, the tumour afterwards disappeared under the use of a stimulating embrocation.

Secondly: a cavity is sometimes formed in the breast, containing one or more genuine hydatids. Here there is a single fluctuating tumour, which gradually increases to a large size. If it be freely opened, the hydatids escape, and the cavity in which they were lodged becomes an abscess, which slowly closes and heals.

Thirdly: in a more advanced stage of the disease, it is not unfrequently mistaken for carcinoma; and I have no doubt that a large proportion of the cases in which it has been supposed that an operation has effected a permanent cure of the last-mentioned disease, have been in reality of this description.

\* See London Medical Gazette, vol. i. p. 344, and vol. xv. p. 25.

I have hitherto confined myself to the description of the origin, progress, and treatment of this disease of the breast, without venturing to give it a name.

It is, however, necessary that we should have the means of distinguishing it in conversation and in writing; and I would suggest "the sero-cystic tumour of the breast" as being an appropriate appellation—preferable, at all events, to a mere arbitrary term; inasmuch as it expresses with sufficient precision the character which the tumour possesses in its origin.

---

## LECTURE XXV.

### SCIRRHUS OF THE BREAST.

IF a scirrhus tumour of the female breast be left to take its course, it gradually increases in extent; it contaminates the neighbouring textures; it finally ulcerates, and in the great majority of cases, the patient's life is terminated in three or four years from the commencement of the disease. Not only is life terminated thus early, but death is preceded by a very painful state of the ulcer. The ulcer is disposed to bleed and to slough, and the patient's life is rendered miserable. There is not a much worse way of leaving the world than that of being destroyed by an ulcerated scirrhus of the breast.

Looking at these facts alone, you would say there is no doubt that the proper thing to be done is to remove the disease by an operation. But there is another order of facts which must be taken into account. In the large proportion of cases in which the operation is performed, the patient is still not alive two or three years afterwards; and, in a great number of cases, instead of the operation stopping the disease, it actually seems to hasten its progress. But, besides this, the operation in itself is not in every case free from danger.

Now these different orders of facts have led different surgeons, accordingly as they have looked at one or the other, to arrive at opposite conclusions as to the propriety of an operation. I have known some very excellent surgeons, among whom were the late Mr. Cline, and Sir Everard Home, both men of great experience, who would scarcely ever consent to the operation for the removal of a scirrhus tumour of the breast, under any circumstances whatever. But then, I have known other surgeons, also experienced men, who were in favour of the operation, perhaps, in the majority of cases. And not only has there been this variety of opinion between different individuals, but I have found the opinion of the same individual to differ at different periods of his life. A very distinguished surgeon once said to me that he thought he would never perform this operation again, and yet that very surgeon, three or four years afterwards, strongly recommended the operation in a case in which I thought it would



fail. This discordance of opinion only shows the difficulty with which the subject is beset, and if this difficulty has stood in the way of men of great experience in their profession, it may well stand in your way, who are only beginning your career. It appears to me, therefore, that it may be of advantage to you if I present some observations on the subject, and endeavour, as far as I can, to clear away the difficulty respecting the expediency and in expediency of the operation.

This, then, constitutes the subject of the present lecture:—Under what circumstances is the operation for the removal of a scirrhus tumour of the breast proper, and under what circumstances is it improper?

It should, however, be observed, in the first instance, that while much depends upon the nature of the case, yet something depends upon yourselves as to the mode of performing the operation. If there be a scirrhus tumour imbedded in the gland of the breast, and you remove the tumour, together with the part of the breast in which it is situated, leaving the remainder of the breast, according to my experience the disease is certain to return; and this corresponds to a rule which I think applies to all cases of malignant disease—that is, that you have no security against the return of the disease unless you remove the whole of the organ in which it is seated. For instance, if there be fungus hæmatodes of the bone of the leg, the patient may have some chance if you amputate the thigh above the knee, but none if you cut through the tibia below the knee. If there be malignant disease of the femur, you have very little chance at all, unless you think it expedient to take out the thigh-bone at the hip-joint. I say, therefore, in cases of scirrhus tumour of the breast, if you perform the operation at all, where the tumour is imbedded in the breast, you must remove the whole of the organ. You may imagine that this is a thing very easy to be done, but you will not find it so in reality, for in amputating the breast, in a thin person, you will be very apt, if you are not extremely careful, to leave a small slice of the gland of the breast adhering to the skin, and I have no doubt that this small portion may, in some cases, form the nidus of future disease. The colour of the gland of the breast varies little from that of the surrounding adeps, the hemorrhage causes confusion, and you must be careful in the dissection to keep the knife near the skin, not near the breast. But, in addition to this, in every case, when you have taken out the tumour, you should examine the surface, and see whether every part you have removed is covered by healthy adeps. If it be not, look on the middle of the flap of the skin, and see whether any small portion of the breast has been allowed to remain there.

So far, then, the success of the operation may depend mainly on what you do; but now let us see what are the circumstances that are independent of any thing that you do, and which may induce you to think that there is no chance of the operation leading to an ultimate cure; and what are the circumstances that should lead you to hope that a permanent cure may be effected.

Scirrhus tumours of the breast may be divided into two classes;

one, where there is a conversion of the gland of the breast itself into scirrhus structure, there being no well-defined margin; the other, where the scirrhus tumour is imbedded in healthy structure, as if it were altogether a new growth, there being a distinct boundary to it.

In the first order of cases, not only does an operation never succeed in making a permanent cure, but it rather hastens the progress of the disease, and the patient generally dies in two or three years, if not before, of effusion of fluid into the cavity of the chest.

Where the skin is contaminated there is no chance of the operation making an ultimate and permanent cure; and it may be contaminated in various ways. Scirrhus tubercles form in the skin, here and there, at some distance round the tumour, while the intermediate portions of skin appear to be healthy, and then an operation will never lead to a cure; for you cannot remove all the contaminated skin. Where the skin is contaminated in this way, the progress of the disease is generally very rapid, and the patient dies in a short time from effusion within the chest. Sometimes the contamination of the skin develops itself in another manner. The skin becomes thickened and brawny, the pores are enlarged, as if you looked at them through a magnifying-glass, and you cannot pinch it up as you can healthy skin. This is also a very bad form of the disease. I have, however, performed an operation under these circumstances in two or three cases; the disease has always returned in the cicatrix directly, and the operation has appeared to hasten rather than to retard the fatal result. It does not matter to how small an extent the skin appears to be contaminated; if any portion of it is thus affected, the seeds of disease are in the neighbourhood, and although your knife may divide skin apparently healthy, yet it is not so in reality.

One effect of a scirrhus tumour of the breast, in a great number of cases, is to cause contraction of the lactiferous tubes which pass from different parts of the breast to the nipple, and this contraction gives rise to a drawing in or retraction of the nipple. I believe that this retraction of the nipple is to be regarded as very unfavourable to the ultimate success of an operation; for I suspect that the disease in these cases has always extended into the skin of the neighbourhood, and if you examine the skin in the neighbourhood of the nipple very carefully, you will generally find manifest indications of disease in it.

In many cases of scirrhus of the breast the skin is drawn over the tumour, and on looking at the patient, there is a sort of dimple over the tumour. Where this dimple is seen you may be almost sure that there is a scirrhus tumour beneath it, and when you examine it, you may feel it with the finger. The presence of this dimple is a very great objection to the operation, and there is little or no chance of a permanent cure. What is this indentation of the skin? I have dissected the parts, and I will tell you how it is produced. There is a small elongation of the disease which passes up from the scirrhus tumour, through the adeps into the skin. There is a filament, as it were, of the disease, varying from a quarter to half an inch in length,



extending from the scirrhus tumour to the skin above it, and the presence of the dimple indicates that the disease is not confined to the breast; but that the skin is already contaminated.

As the disease advances it contaminates the glands in the axilla. If the breast be inflamed, the glands in the axilla may be enlarged, just as glands may be enlarged from a boil or any other inflammation in the neighbourhood; but when there are large indurated glands in the breast, you may be sure that there is the same disease in the axilla—that the glands in the axilla are contaminated, and that there is no ultimate cure to be expected from an operation. You may say remove the diseased glands from the axilla; I have done this myself, and I have seen it done by others, but I will tell you what always takes place. Perhaps there appears to be only one enlarged gland in the axilla, you attempt to remove it, but when you have got into the axilla you find that there are other glands contaminated in the same manner, though of too small a size to be perceived before.

I need hardly state that if the scirrhus tumour adheres to the parts below, to the pectoral muscle, or to the ribs, and the skin is ulcerated, there is no chance of a permanent cure from the operation.

You will sometimes find patients who, while they have a scirrhus tumour in the breast, have indications of some other form of malignant disease in other organs. One patient may have signs of malignant disease of the liver, another of the lungs, and another of the uterus. Of course, if there be any suspicion of the same mischief going on in internal organs, you will know that no permanent cure is to be expected by the removal of the diseased breast.

You must also take into account the state of the patient's health, her age, and her condition in other respects. If, for instance, an old woman labours under scirrhus of the breast, which is in a state of quiescence, you would never think of amputating the breast, because she may die first—the disease may out-last her.

Now, having taken away these cases, you will find, in practice, that there are very few left in which you will think it right to propose an operation.

What are the cases, then, in which an operation for the removal of the breast is proper? Where the skin is perfectly sound; where the nipple is not retracted; where there is no diseased gland in the axilla; where there is no sign of internal mischief; where there is no adhesion of the breast to the parts below; and where the patient is not very much advanced in life, I should say that there is a reasonable chance of an operation making a cure. I do not intend to say that in all the excepted cases there will be a permanent cure—far from it; but there will be in some instances, and the chance of it may be sufficient to warrant you in recommending the patient to submit to the operation. I have the satisfaction of knowing that several persons on whom I have operated under these circumstances are now alive and well, but who would certainly have been dead long since had I not had recourse to it. As long since as 1832 I removed a breast affected with scirrhus tumour, and the lady was alive and well last year. Since the operation she has married and borne children. Last year

I was called to see a lady on whom I performed the operation as long ago as 1830, and there she was, still alive and well.

But besides such cases as I have last described, there are others in which the operation for a scirrhus tumour connected with the breast may be proper. There is sometimes formed on the surface of the breast a hard tumour, which feels like scirrhus; on cutting into it it looks like scirrhus, and I can give it no other name. It appears to be unconnected with the breast, but when you come to remove it you find that it is attached to the surface of the breast, just at one narrow corner. I have removed three tumours of this kind, leaving the breast uncut, except where I separated the tumours from it, and in each of these three cases the patient was alive and well some time afterwards. I do not know that in any one of these cases there was really a return of the disease.

Scirrhus tumours sometimes take place in the nipple, and I believe they are to be distinguished from similar tumours in the breast itself, and that there is a much greater chance of a permanent cure where they originate in the nipple than where they have their origin in the breast. A lady with a scirrhus tumour of the nipple consulted several surgeons regarding it, and as the disease was quiet they all recommended that it should be let alone. After some time she came to London, and placed herself under the care of the late Mr. Rose, of this hospital. I saw her with him. The scirrhus tumour had been going on for some years, confined to the nipple, without coming to any harm, but it was now extending. We agreed that the operation should be performed, and Mr. Rose removed the breast. The breast appeared sound and the nipple alone diseased. The patient recovered, and was alive and well many years afterwards. A lady consulted me concerning what I must call a scirrhus tumour of the nipple, for it was hard, and presented the usual characteristics of scirrhus. It had ulcerated, but the breast seemed sound. She was a large elderly woman, with a very large breast and a great deal of adeps. The removal of the breast would have been a frightful operation, and it is more than probable that her constitution would not have borne it. She was suffering great pain from the disease, and I applied chloride of zinc, and afterwards the caustic potassa, till I destroyed what appeared the whole of the disease of the nipple. This occurred three or four years ago, the wound healed, and the patient is alive and well at this moment.

The two last orders of cases are sufficiently distinguished from scirrhus tumours imbedded in the breast itself.

But here another question arises. Is there no other reason for performing the operation for the removal of a scirrhus tumour of the breast than that of making a permanent cure? May it not be advisable to perform it sometimes in order to give the patient a respite, and to relieve her from present suffering? Undoubtedly it is, and I will mention some cases illustrative of this observation. A lady, about forty years of age, had a scirrhus tumour of the breast, and there was a cluster of diseased glands in the axilla; she came to me, and the skin over the tumour appeared to be on the point of



ulceration, so that the disease was proceeding to great mischief. I informed her that I was afraid the operation would not make a permanent cure, and that I could not recommend it. She inquired whether I had anything better to offer her, and I could not say that I had. She went away, but in two or three weeks came again, and said that she had consulted two or three other surgeons, whom she named, and found that they were all of the same opinion, but that she had come to beg a favour, which was, that in spite of that, and to satisfy her, I would remove the breast. I asked what were her reasons, and she said she was in these circumstances: that she had a daughter, an only child, eighteen years of age; that she knew she could not live long, but that it was a great object to her daughter that she should live to be her friend and adviser two years longer. It was for that reason, and that only, that she wished to take the chance of the operation. There was no withstanding such an appeal as this, and I removed the breast, but never thought of touching the glands in the axilla. There was no distinct return of the disease in the cicatrix, and the glands in the axilla did not much enlarge; but at the end of two years she was seized with symptoms of disease of the chest, effusion of fluid into the pleuræ, and she died. I may avail myself of this opportunity of mentioning that this is the most common way in which scirrhus tumours terminate life. Miliary tubercles, about the size of millet-seeds, form in the lungs, and then there is effusion of fluid in the pleuræ. A lady came to me with scirrhus tumour of the breast. Both the tumour and the breast were small, and I should have recommended the operation, but there were two or three hard and large glands in the axilla. I said to her, "You are not suffering much, I cannot recommend the operation; let the disease alone." A year afterwards she came to London again, and the tumour had now ulcerated, and the glands much increased. The ulcer in the tumour produced excessive suffering, and she was miserable. I did not remove it with a knife, but I used chloride of zinc and destroyed it. The sore healed, and some seven or eight months afterwards there was a tubercle formed in the cicatrix, which again ulcerated, and I destroyed that in the same way. She was thus enabled to go on with great comfort. After enduring the torture of scirrhus of the breast, she went on suffering nothing except at the time the chloride of zinc was applied, for a year and a half, but at the end of that time disease was established in the lungs, effusion took place into the pleuræ, and she died. A lady had a large malignant tumour in the breast; it was not exactly scirrhus, but approaching to it in its character. I did not think that an operation would lead to a permanent cure. By-and-by she came to me again, and now the tumour was ulcerated, and was very much enlarged. The skin had ulcerated, the ulcer was horribly painful, and her life was truly miserable. I said to her, "I am afraid you will not get an ultimate and permanent cure, but suffering as you do, it is worth while to have the breast removed in order to relieve your present sufferings." It was a large tumour, which was one objection which I had to the operation. The operation was performed, and there

was a good deal of bleeding. However she recovered, and continued well upwards of three years. She had then some abdominal disease, and a tumour could be felt in the belly, which I concluded was of the same character as that in the breast. When I last heard of her she was supposed to be dying, and I presume that she is now dead; but she was relieved from great suffering, and lived three years longer than she would have done had not the operation been performed. I may mention another case. A lady came to town with a large tumour in one breast. There was a fungus protruding, and in the centre of the fungus an opening, through which a probe could pass to the bottom of the tumour, and there was an enlarged gland in the axilla. Sir Astley Cooper saw her with me, and she was suffering a great deal from the ulcerated tumour. We agreed that she should have the breast removed, not that we expected a permanent cure, but to relieve her present sufferings. The breast was removed, the wound healed, and she had no return of the disease there, but a year afterwards her physician in the country wrote to say that she had symptoms of some malignant disease going on in the chest, and she died of effusion into the pleuræ. There was another lady, with a small scirrhus tumour of the breast, which was very painful. She consulted me respecting it. I said that the operation would not make a permanent cure, but as she was suffering miserably she might as well have it removed. I removed it, and she was in comfort for many months.

There may, then, be cases in which you are justified in performing an operation for the removal of a scirrhus tumour of the breast, not with the expectation of effecting a permanent cure, but to obtain respite and relief to prevent sufferings. But here you must use some discrimination, for if the skin be thoroughly diseased I do not believe that in one case you will do any good; the disease will return in the cicatrix so soon that the patient will derive no advantage whatever from the operation.

There is another circumstance to be taken into consideration when you are called upon to give an opinion as to the expediency or inexpediency of an operation. Is there any danger in the operation itself? It is commonly said that this is not a dangerous operation, but I can appeal to the experience of all surgeons who have had much to do with the operation, whether they have not had persons die from it,—whether it is always free from danger. I know it is not. I have lost patients after the operation, and every surgeon, I know, has had the same misfortune. Here, I think, that something depends on the mode in which you perform the operation, and manage the patient both before and afterwards; and a great deal, also, depends upon circumstances not under your control.

The circumstances that are under your control are these. First, you should take care that there is as little hemorrhage as possible at the time of the operation. Never give credit to those who stand up at any operation, and say that the patient has lost no more blood than will do him good. Hemorrhage during an operation is a great evil, and is one of the chief causes of failure, not that the patient dies



directly of hemorrhage, but indirectly. It lays the foundation for erysipelatous and venous inflammation and other mischief some time afterwards. In addition to this take care not to keep the patient very low before the operation. What we used to call preparing a patient for an operation, by low diet on all occasions, was very injurious. The patient need not be stuffed and crammed before an operation; he should have his bowels emptied, but as to repeated purging and low diet, that is wrong both before and after any operation. An operation is a shock to the system, making a great demand upon the vital powers, and if you withhold the sustenance and stimulus to which the patient is accustomed, the constitution probably will not be able to bear the shock.

So far the success of the operation is to a certain extent under your control, but then there are circumstances not under your control that are unfavourable. For example, in a large fat woman, with an enormous breast, the operation is frightful; there is a large extent of surface, and there must be great hemorrhage notwithstanding all your care. An old person will not sustain the operation like one less advanced in life. The operation is always attended with a certain degree of danger in a patient who, in other respects, is of delicate constitution. Those women whom you meet with in private practice, who have a small pulse, cold hands and feet, and are liable to attacks of hysteria, are always unfavourable for an operation, and especially one that is attended with a moderate loss of blood. In such women as these you must avoid an operation. But where the breast is small, where the patient is otherwise healthy, and not much advanced in life, and where you are careful not to starve the patient, either before or after the operation, and that there shall be as little blood lost as possible, there the danger of the operation is comparatively trifling.

I have thus spoken of the operation for the removal of a scirrhus tumour of the breast, but this organ is liable to other malignant diseases. The observations that I have made apply to the one case as well as the other, but I think that where malignant disease of the breast has the form of fungus hæmatodes the chance of ultimate success is even less than where it has assumed the form of scirrhus. Fungus hæmatodes is a worse form of malignant disease than scirrhus, and in the few cases which I have seen of it in the breast, where the tumour has been removed by operation, the patient has always died within a short time afterwards from some disease of the lungs and effusion into the pleuræ. But, after all, I believe that malignant disease is essentially of the same character whether it assumes the form of scirrhus, or fungus hæmatodes, or pancreatic sarcoma. Whatever the name given to them by pathologists may be, I believe that malignant diseases are all nearly related one to another, and that the remarks I have made respecting one are applicable to the rest.

I will illustrate this last observation, which, I think, it is of importance in practice you should not forget, by mentioning some cases. A woman had a scirrhus tumour of the breast, attended with that

brawny condition of the skin which I described as indicating a very bad form of the disease. There was a conversion of the glands into scirrhus structure, not a distinct tumour of the breast. She had also signs of disease of the liver and a discharge from the uterus. The woman died, and on examining the breast there was a well-marked scirrhus tumour; in the liver there was an equally well-marked tumour of fungus hæmatodes or medullary disease; and in the uterus that peculiar excrescence to which the late Dr. John Clarke gave the name of cauliflower excrescence of the uterus, and which he describes as a malignant disease. These three diseases, all of which are malignant, and to which different names have been given by pathologists, were associated in the same individual, and the preparations are now in the museum. But I have seen the same disease occur in succession, and I will mention a case in point. When I was a young man I went with Sir Everard Home to perform a private operation. A lady from the country had a hard tumour, apparently in the abdominal muscles, which he removed, and when we came home and examined it, we found that a portion of the peritoneum adhered to it, and that it was a well-marked case of scirrhus tumour. The wound healed very well, but some time afterwards another tumour formed in the cicatrix, and began to enlarge. She came to London again, and put herself under Sir Everard Home. The tumour was now larger than the first he removed. He operated a second time, but this tumour had none of the characteristic structure of scirrhus. I can only describe it by saying it was like the fibrin of the blood, without colour; laminated something like the buffy surface of a coagulum of blood drawn during inflammation and very slightly organized. The wound healed, but after a time another tumour formed in the cicatrix, and she again came to London. It was not thought worth while to remove this, it increased in size, occupied a great part of the belly, and she died. It devolved on me to examine the body, and the tumour now was entirely different in appearance from either of those which had been removed. It was a regular brain-like mass, a medullary tumour, or a tumour of fungus hæmatodes. In the one case three different kinds of tumour existed in the same individual at the same time; in the other three different kinds of tumour showed themselves in succession. So you will sometimes remove a tumour from the breast in various parts of which you have a different structure.

There is a circumstance that ought to have been mentioned in an earlier part of the lecture, but which I accidentally omitted, and which is always to be taken into account whenever you have any doubt as to the expediency of performing an operation. It is very true that a scirrhus malignant tumour of the breast will, if left to itself, generally terminate the patient's life in three or four years, but very often it lasts much longer. I remember a lady of fashion who had a scirrhus tumour of the breast; she mingled in society, and nobody knew any thing about it for several years; I believe ten or fifteen. I remember another lady who had a scirrhus tumour of the breast for twenty-five years, and she died at last, not from dis-



ease of the breast, but from effusion into the cavity of the chest. If you are in doubt about the expediency of an operation, and the disease be in an indolent state, the recollection of such cases as I have just mentioned should be sufficient to incline you to reject the operation. The chances of a patient living long with such a disease are not sufficient to make you throw away the chance of an operation where it is likely to be attended with advantage; but it is sufficient to make you decline an operation when other circumstances would lead you to doubt its propriety.

Care should be taken to distinguish scirrhus and other malignant tumours of the breast from those of a non-malignant character. I consider it unnecessary to call your attention to the diagnosis of different tumours, but I am anxious to impress upon your minds that you must be careful to learn this for yourselves from other lectures. When a practitioner tells me that he has been particularly successful in the operation for scirrhus tumours of the breast, I am always satisfied that there has been a want of accuracy in the diagnosis. I remember a gentleman stating that he had performed this operation ten times, and that the disease had not returned in a single instance. No very experienced surgeon would have made that statement, but I subsequently saw a tumour which this gentleman was going to remove, and it was nothing more than a common chronic abscess of the breast which he had denominated scirrhus.

---

## LECTURE XXVI.

### ON THE ADMINISTRATION OF MERCURY IN SYPHILIS.

I SHALL now call your attention to the administration of mercury in cases of syphilis. I shall not enter into detail either as to the mode of its exhibition or the cases in which recourse should be had to it; but I purpose to make some general observations, which, at this time, when so much difference of opinion prevails as to the use of mercury, and there is so much random practice in its employment, may be serviceable to you in the beginning of your profession.

Mercury was used in cases of syphilis very soon after the disease was first recognized in Europe. I believe that from within three or four years after the siege of Naples, where it was supposed that it first broke out, through good report and through evil report, in spite of the too strong prejudices of some in its favour, and of others against its use, mercury has maintained its general reputation in the profession up to this day. At different periods, however, other remedies have been proposed for the cure of venereal disease. The late Sir Wm. Fordyce wrote a pamphlet for the purpose of proving that it was to be cured by sarsaparilla. An army surgeon, Mr. Grant, wrote a pamphlet in favour of opium; another practitioner has cured

it by ammonia, and others have spoken highly of nitro-muriatic acid. Many other remedies have been proposed as a substitute for mercury, which it is not necessary for me to enumerate. In hot climates—Spain, Portugal, the West Indies, and the islands of the Pacific Ocean, syphilis was said to be cured without the aid of a particle of this remedy. But in opposition to what I have just mentioned there was, in the beginning of this century, a prevailing notion that mercury was a specific for syphilis, and that it was never cured without it. The late Mr. Abernethy, in his work on what he terms pseudo-syphilis, lays it down as a rule that syphilis is uniformly progressive if mercury be not administered, and he said of every disease that came before him in which the symptoms improved without the aid of mercury, “this cannot be syphilis.” He gave no reason for this extraordinary assumption—it was a complete *petitio principii*—a begging of the question, and this illogical conclusion, at which he had arrived, was sufficient to destroy the value of this part of his works. Not long after this opinion had been published by him, and was maintained generally throughout the profession, a friend of mine, the late Mr. Rose, who subsequently became surgeon to this hospital, instituted a series of experiments on the subject of the treatment of this disease. He had ample opportunities for carrying these on; for he was surgeon to one of the regiments of Guards, and soldiers associating with the lower orders of prostitutes, I need hardly say are very liable to become affected with syphilis. For one or two years he treated every soldier that came into the regimental hospital, suffering under any form of syphilis, without mercury. I saw these cases, and every now and then watched their progress with him. Every sore upon the organs of generation was cured under his management without the employment of this agent. It is true that many of these sores were not venereal, but many of them were of that character; and the hardness which was left behind disappeared without resort to mercury. Many of these patients never had secondary symptoms which may be attributed to the sores not having been venereal; but in some cases, where secondary symptoms appeared, they were slight, and others severe, exhibiting nearly the usual character, but whatever they were they yielded without this agent. In two or three cases where there was inflammation of the iris, and mercury was necessary in order to save the eye, he employed it. Mr. Rose, therefore, came to the conclusion, which these cases seemed to justify, that the disease was one which would get well even if mercury were not used. Other army surgeons repeated these experiments, and arrived at the same result, and I believe that the disease is now treated in the army to a considerable extent in this manner.

Now, these observations led a certain part of our profession to a view of the subject entirely different from that which they before entertained; and some began to contend that mercury did a great deal of harm, and was in itself a worse disease than the one it was intended to cure. With respect, however, to recovery from syphilis without the aid of mercury, I do not believe that you can apply a rule, drawn from the observation of what occurs in soldiers, to society.



at large. We find that the effects of disease in all cases depend very much on the kind of constitution that has to sustain it. Students from the country, on coming here, have frequently expressed their astonishment at the difference in recovery from compound fracture in the hospital and in those places in the country where they have seen it. But here the occurrence takes place in one kind of constitution, and there in another. When the cholera visited London it destroyed 3000 out of more than 1,500,000 inhabitants; in Sunderland it carried off a large proportion of the population; and in Paris I think the mortality was about one in thirty. Here the cholera did not destroy the affluent classes, but those who were ill-fed, ill-clothed, and were breathing a poisonous atmosphere, and they sank under it with great rapidity. So I apprehend it to be with syphilis. Soldiers are men with strong constitutions, and are in good health, otherwise they would not be received in the army. They are not much advanced in life; they are sent to the regimental hospital, and are there kept constantly under the eye of the surgeon, dieted as he pleases, and their general health is attended to in every respect. They are not allowed to be exposed to atmospheric changes of the weather, and, in short, from their constitution and the situation in which they are placed, they may be supposed to have the power of throwing off morbid poisons which would not be thrown off by others. Experience and practice will, I think, fully confirm these observations. I know that in this hospital I have tried to treat syphilitic patients without mercury with very little success indeed, and that in private practice the attempt would prove altogether a failure. Sir Wm. Wimpess, who was surgeon-major to the Coldstream Guards, but who has now retired from service, saw a great deal of syphilitic practice, and he told me that he could manage the cases of privates in this manner, but not of officers. When Mr. Rose entered into private practice he thought that he could apply the same rule there which he had carried out among the soldiers, but he found that he could not, and he was compelled, like other surgeons, to give mercury. In cases where he endeavoured to avoid its exhibition he found that he was continually beset with difficulties.

With regard to the other point I mentioned,—the opinion that mercury very often tends to aggravate the disease instead of doing good,—I know that its injudicious use will do harm, but I am satisfied that that is not the result when it is wisely administered. It has been said that there is no disease of the bones where mercury is not given. I know that in patients who are treated by mercury there is a greater chance of disease of the bones than there was in Mr. Rose's patients, to whom it was not exhibited; and I know that when given for liver complaints and for diseased testicle it may produce nodes. But, admitting this to be true, I am quite sure that syphilis will run on till it produces nodes, by which I mean disease of the bones, even where no mercury has ever been given. I will state a case in point. A gentleman had a chancre which no one doubted to be venereal; he took no mercury and it healed up. I do not remember exactly what symptoms followed, but when I saw him, in consultation with Mr. Rose, a couple

of years afterwards, he had extensive disease of the bones of the nose, which was still advancing; we agreed that the best thing we could do was to put him under the influence of mercury, of which he had never taken a grain, and try whether or not it would stop the disease. He was to be furnished with lodgings in London, for the purpose of going through a mercurial course, but he had a fit of epilepsy, and then another, and that was followed by a third, after which he became maniacal and died. I do not know that there was any post-mortem examination, but neither Mr. Rose nor myself doubted that the disease had crept up the ethmoid cells, attacked the ethmoid bone, and affected the brain and its membranes. I saw another case treated without mercury. A patient had a primary sore, of which he got well, but a few months afterwards there was pain of the limbs, which were considered neuralgic, and by and by there was a node on the skin and another on the elbow. He had never had any disease prior to the chancre, and we could not but suppose that the virus had entered the system, and the secondary symptoms being passed over, had gone at once to the bones. The conclusion of the case was very remarkable; the patient got entirely well with sarsaparilla, no mercury being given.

I am sure that experience proves to me, and it will to you, that we find no remedy having the same power to extinguish venereal disease as mercury, but then it must be not only judiciously administered at the time, but care must be taken that it is only employed in proper cases; it may do great harm if it be improperly used. There is nothing remarkable in this fact. With the exception of sarsaparilla, I do not know of any medicine that will do great good that may not act as a poison. I saw a gentleman very nearly killed by an over-dose of quinine; the same circumstance has occurred from iodide of potassium, and many persons have been destroyed by arsenic. You are not to suppose that you are to administer mercury at random in all cases, but the general rule is that in cases of syphilis it is to be exhibited, and I shall endeavour to point out briefly, not the cases in which you may give it, but the exceptions to the rule.

First of all, there are persons of a certain delicate constitution, of a scrofulous disposition, and who are disposed to phthisis. You would not give mercury to a man of this kind until you were quite sure that it was absolutely essential; nevertheless there are persons of a scrofulous tendency who are best treated by this means. If mercury be an evil, syphilis is a still greater one. In scrofulous persons local diseases are especially developed after the system has been affected by a morbid poison. If they are disposed to phthisis they will have tubercles in the lungs after scarlatina, measles and small-pox; and it is just the same after syphilis. You find enlargement of the glands of the neck take place whenever the system is disturbed by syphilitic virus, and here mercury is not to be exhibited unless you are sure that it is wanted. But if there be syphilis it is better to give it than let that disease take its course; it must, however, be administered with great caution, in moderate doses, and the patient must be carefully watched all the time.



Persons who appear to be in strong and vigorous health are not always good subjects for mercury. Many persons of this description have been living irregularly, drinking a great quantity of wine, and mercury is very likely to disagree with them and produce great mischief. True it is that the poison of syphilis will do the same; it will often produce frightful symptoms and the most intractable diseases; but it is better to put off the use of mercury for some time until you can improve the constitution. If mercury be exhibited under such circumstances you have two evils to encounter, but by withholding it you have only one. If you wait, put the patient on a better system of diet, make him live a more regular life, and attend to the general health in all respects; you may then administer mercury with advantage, and probably cure the case.

There are some persons in whom, for reasons we cannot explain, mercury always acts as a poison. They certainly are few in number, but you cannot tell beforehand who they are, and therefore every person should be carefully watched to whom you administer mercury. Where there is a great deal of inflammation in the neighbourhood of a primary sore it is scarcely ever right to have recourse to mercury in the first instance; for the probability is that it will produce sloughing. You must combat the disease by bleeding, purging, and other means; and it is better to patch up the sore as well as you can, and let the disease go on until it has produced secondary symptoms, than to give mercury to a patient under these circumstances. In cases of phagedenic and sloughing chancre, where the condition of the chancre depends on the patient's constitution, mercury, if given in the first instance, will aggravate the disease, and make it spread more rapidly than it would otherwise do. But there are cases in which the phagedena depends on the intense action of the venereal poison, as I shall hereafter explain, and in that case mercury may be exhibited.

You will sometimes find that in the case of secondary symptoms mercury, instead of acting upon them and curing them, disturbs the general health; the symptoms increase, and the more you give the worse they become. This arises from the patient being in a bad state of constitution, which state of the constitution may depend on causes neither under your control nor that of the patient, but on the patient having taken mercury in an injudicious manner. Under these circumstances you must not continue this agent, but leave it off and he may then recover; nevertheless you may require to revert to it at last. In order to illustrate this observation I will mention a case. A man was brought into this hospital with sore throat, and a phagedenic eruption, having the character of syphilitic eruption, in different parts of the body, in a state of painful ulceration. He looked exceedingly ill, and I found that he had been taking mercury in large quantities, under a private practitioner, for five months. His gums were extremely sore when he came here, and the more mercury was pushed the worse he became; I therefore left it off, and gave sarsaparilla, and in a few months, the eruption disappearing, he left the hospital. But after the lapse of a few months

he came in again with sore throat and ulceration, having taken no mercury in the interval. I gave sarsaparilla a second time, and with the same beneficial effects, but the eruption did not disappear so rapidly as in the first instance. In the course of three or four months he again came in, and the ulceration was again spreading, accompanied with sore throat. I resorted to sarsaparilla a third time, and the symptoms went away, but more slowly than on either of the previous occasions. Towards the conclusion of the time that he was in the hospital he laboured under inflammation of the iris, for which I gave him oxymuriate of mercury, and he got well. Three or four months after this the disease again broke out, the ulceration reappeared and spread, and the sore throat returned. He now went into the Lock Hospital, under the care of Mr. Blair. This was fourteen months after he first came to St. George's; he had taken no mercury during that time, except for the iritis, and Mr. Blair now very properly put him under a course of mercurial inunction, and I believe he was permanently cured. If I had done this when he first came here I should probably have killed him. I might mention a great many other cases to illustrate these observations.

Now, I have said that in the great majority of cases mercury is the best remedy you can employ for the cure of syphilis, but then care must be taken that it is properly and judiciously administered. There are different ways of exhibiting mercury; it may be given internally by pills; it may be used in the form of ointment, or by fumigation. The mercurial preparations that may be given internally are various,—blue-pill, mercury with chalk, calomel combined with opium, Plummer's-pill, iodide of mercury, bichloride of mercury, and some other forms.

I have often given mercury internally in the shape of pills. When you want to affect the system rapidly, as in iritis, pills are preferable, because the mercury affects the system sooner. A patient labouring under iritis is in danger of going blind, and you must remove it as soon as you can. You effect this much sooner by giving calomel and opium than by using mercurial inunction, and in slight cases the disease may be cured by mercury administered internally. There are a good many patients so circumstanced that they cannot take it in any other manner; at other times you are indifferent about the mode of administration; and in some cases you are compelled to give it internally against your inclination. Thus, upon the whole, there are a good many cases in which mercury will be exhibited internally.

But if you inquire which is the best way of giving mercury in cases of syphilis where the symptoms are not of the very mildest character, I must say that mercurial inunction is infinitely to be preferred to mercury taken by the mouth. Mercurial inunction, however, is dirty, laborious, and troublesome, and it makes the case public to the family in which the man lives. For these reasons it will be objectionable to the patient; but it has this advantage, it is much less liable to gripe and purge, and it cures the disease a great deal better. It does not damage the constitution half so much as mercury taken by the mouth; nay, I will go so far as to say that,



except in the very slightest cases, you really cannot depend upon any other means than inunction. You may very often patch up the disease by giving mercury internally, but it will return again and again, and you may cure it at last by a good course of mercurial ointment. But especial care must be taken that this is properly applied. If it be left to a patient he will rub it in for five minutes or so, whereas it requires to be rubbed in before the fire for three-quarters of an hour ere it enters; but by and by the friction may be continued for a shorter period. Where the symptoms are not of the mildest character it is desirable that the patient should, if possible, be confined to the house. Mr. Pearson observed, long since, that going into the fresh air would undo the effect of mercury, and I never will be responsible for thoroughly eradicating the disease where the patient is at all exposed to cold, and where he does not lead a most careful and regular life.

In all cases where you employ mercury you have two objects in view,—first, to cure the present symptoms, and secondly, to prevent their return. It appears to me that at the present day a great number of practitioners keep the first object only in view, and lose sight of the second. I have repeatedly seen persons who have taken mercury for chancre; it has healed in a fortnight, but a hard base has been left, and then in nine cases out of ten there have been secondary symptoms. If it be taken for a primary sore the patient should never leave it off until the hard cicatrix has disappeared. You must exhibit it until the sore has healed, and for some time afterwards; and the same plan must be pursued with reference to the secondary symptoms, or they will return. When the eruption has disappeared from the body it must be used as a prophylactic, to prevent the return of the disease, for probably another month.

I should say that if a patient be confined to the house, or only allowed to go out a little once or twice a day, and if he be made to rub in mercury, and continues it for some time after the symptoms have subsided, the case being carefully watched, you will, in most instances, make a real and permanent cure of the disease. This is not the way in which it is administered by many practitioners now, but it is the mode in which it was done formerly. You must not suppose that we have made an advance in all departments of surgery; on the contrary, I am sure that in some we have gone back. I am satisfied that the mercurial treatment of syphilis as employed by the late Mr. Pearson during a great part of his life, was as nearly perfect as possible, and it was much more successful than the less careful treatment of modern practitioners. Mr. Pearson was surgeon to the Lock Hospital, and having no general hospital to which to attend, the powers of his mind were very much devoted to this disease and to its treatment; and the practice which I have now recommended was that which he adopted. I had an opportunity of meeting him a great deal when I was first entering into practice, and I am satisfied that his mode of treatment was eminently successful. In his work on "*Materia Medica*," there is an article on syphilis, in which there are many excellent observations on mercury, treating

the subject in detail in a way in which it is not my intention to do at present; but I refer you to that article as being well worthy of perusal.

Wherever you can, in the treatment of syphilis, make the patient take mercury in the form of unction if possible. It is the best plan to pursue in all cases, although it is not necessary in all cases; but where the symptoms are severe, and a long course is required, it is the safest mode of proceeding.

I will avail myself of this opportunity of stating the class of cases in which you may employ mercurial inunction with the greatest advantage. Children, when born, sometimes labour under syphilis, the father or mother having been affected with it—perhaps the father and not the mother. The child at birth looks thin, and is of small size, and instead of thriving it becomes still thinner. At the end of three weeks it is covered by a nasty scaly eruption; there is a sort of aphthæ in the mouth, and chaps about the lips and anus. I have tried different ways of treating such cases. I have given the child gray powder internally, and given mercury to the wet-nurse. But mercury exhibited to a child by the mouth generally gripes and purges, seldom doing any good; and given to the wet-nurse it does not answer very well, and certainly is a very cruel practice. The mode in which I have treated such cases for some years past has been this, —I have spread mercurial ointment, made in the proportion of a drachm to an ounce, over a flannel roller, and bound it round the child once a day. The child kicks about, and the cuticle being thin the mercury is absorbed. It does not either gripe or purge, nor does it make the gums sore, but it cures the disease. I have adopted this practice in a great many cases with the most signal success. Very few children recover in whom mercury is given internally, but I have not seen a case where this method of treatment has failed.

Mercurial inunction may be used in certain cases in which, were mercury taken internally, it would do absolute harm. For example, a gentleman had a nasty phagedenic sore upon the penis; it could not be said that he was in ill health before, and therefore there was some reason to believe that the disease was spreading from the intensity of the venereal poison. He had taken calomel and opium until the gums were sore, and he was decidedly worse under it. The disease destroyed a great part of the glands, and evinced no disposition whatever to stop. It resisted all modes of treatment until he was put on a course of mercurial inunction; its progress was then arrested directly, and the sore healed with great rapidity. I have seen several instances of the same character.

Another mode of administering mercury is by fumigation, and this may be applied either locally to a part, or generally to the whole body. The patient is to sit in an apparatus like that used for sulphur-baths, but instead of sulphur being thrown on a hot iron, black oxide of mercury is to be used. The patient may be affected very speedily by allowing him to hold his head inside the bath for two or three minutes, so that he may imbibe the mercurial vapour. I have employed this with success in several cases where it was my object to affect the system as quickly as possible, but I have found that Mr.



Pearson's objection to it is well founded, namely, that it is difficult to regulate the action of the mercury. You may affect the system too much or too little, and you may be taken by surprise by the patient's gums becoming all at once excessively sore. With reference to the effect of mercury on the system generally, I believe it is always better that the gums should be made a little sore, and that there should be some degree of salivation. You cannot depend upon it when employed in syphilis unless these effects are produced.

But, as I have already said, there may be cases in which mercury may not be proper at all, and in which there are reasons for doing without it if you can. In some individuals in private practice, as well as among soldiers, the affection will be thrown off by the patient's own constitution. In a great many instances, slight symptoms will disappear merely by the improvement of the general health. A gentleman had a well-marked venereal eruption. He was in London, and was about to take mercury. He was called to go into the country, and I ordered him to let the mercury alone for the present. He had not been in the country air long before all the symptoms left him. Cases like these are recorded in Mr. Abernethy's book, and they led him to say that they were not cases of syphilis. After a patient has passed through a mercurial course it is not sufficient to tell him that his disease is at an end. It is very important that he should be kept in good health. If, after the disease appears to be eradicated, the health is broken down, the disease may return at a considerable distance of time. After a mercurial course it is well to put the patient through a course of sarsaparilla, to remove the debilitating effects of the mercury itself from the constitution. I will mention a case to show how much depends on the state of the general health. A gentleman had secondary symptoms, and I put him through a course of mercurial inunction for ten weeks. He was confined to the house and most carefully attended to, and took mercury for some weeks after the eruption had disappeared. He seemed to be quite well, and went abroad and continued so; but at the end of a year, being in Lisbon, he went out, got his clothes wet, and took cold. This was followed by a severe attack of erysipelas, and a Portuguese doctor very indiscreetly bled him to a large extent, and an enormous abscess formed. His health became completely broken down, and he had now a return of the venereal disease, the symptoms being worse than they were before. When his health had improved a surgeon in Lisbon put him under another course of mercury, and cured him.

In cases where the symptoms are aggravated by the use of mercury they may be removed by sarsaparilla; in other instances they will subside under the use of iodide of potassium. It is now very much the custom to administer the latter in cases of syphilis. No doubt it is an excellent remedy in some cases, and it comes in to your aid extremely well where you have reasons for not giving mercury; but if you ask me whether you can rely upon iodide of potassium as well as upon mercury, I say, No. You may remove slight symptoms by giving it for a time, and severe symptoms by

exhibiting larger doses; but in the latter case, so far as I have seen, it does not make a permanent cure, for the symptoms return again. As a prophylactic it is not to be compared with mercury.

I have spoken of the necessity of administering mercury, not only till the symptoms are relieved, but for a considerable time afterwards. You may inquire whether a long course of mercury will not injure the constitution more than a short one. Undoubtedly it will, but that is the very reason why you should give a long course at first. I will explain myself. If you exhibit a short course the disease is sure to return; you administer a second course, and the disease returns again, and thus you have repeated courses. Not only is the system weakened by the disease, but whenever it returns it assumes a more formidable character. But if you put the patient through a long course in the first instance, the frequent recurrence to the use of mercury will be unnecessary. A patient who takes mercury for a month will probably never require it again; but if he takes it only for a fortnight he has secondary symptoms, and then he will require to take it for four weeks, so that that which is a short course at first becomes a long one in the end.

---

## LECTURE XXVII.

### LOCAL NERVOUS AFFECTIONS.

A MIDDLE-AGED lady, who had been exposed during a considerable period of time to the operation of causes of great mental anxiety, complained of a constant and severe pain, which she referred to a spot, about three or four inches in diameter, in the situation of the false ribs of the left side. Besides this she was subject to fits, apparently connected with hysteria, and was otherwise in a very impaired state of health. Under these circumstances she died, and on examining the body after death, particular attention was paid to the side to which the pain had been referred. No morbid appearances could be detected in it; there was neither inflammation, nor thickening, nor adhesion, nor any morbid change of structure, nor the slightest deviation of any kind from the natural condition of the part.

Now such a case as this is by no means uncommon. It is only one of many which might be adduced in proof of this proposition, namely, that the natural sensations of a part may be increased, diminished, or otherwise perverted, although no disease exists in it which our senses are able to detect either before or after death.

There are other cases which may be regarded as corresponding to those to which I have just alluded, except that the nerves of motion are affected instead of those of sensation. Here there is an involuntary contraction or spasm of a particular set of muscles, or certain muscles lose their power of action altogether, and become paralytic;



and yet, if an opportunity occurs of examining the parts after death, the most minute dissection can demonstrate nothing in them different from what there would have been if the spasm or paralysis never had existed.

Nor are these facts difficult of explanation. Every part, to which a nervous filament can be traced, may be said to have its corresponding point in the brain or spinal marrow, and an impression made either at its origin, or anywhere in the course of the trunk of a nerve, will produce effects which are rendered manifest where the nerve terminates, at that extremity of it which is most distant from the brain.

These local nervous affections are of very frequent occurrence. In one shape or another you will meet with them at every turn of your future practice, and a knowledge of them is of the greatest importance, both to the physician and surgeon. Without it, you will be continually mistaking the real seat of a disease: your attention will be directed to a wrong object, and, following the symptoms, you will be in danger of overlooking the cause on which they depend. The investigation, however, is not unattended with difficulty, and it will often require all your professional sagacity and skill to trace the phenomena, which occur in these cases, to their true origin.

If you accidentally strike the inside of your elbow against a projecting body, the corner of a table for example, you feel a peculiar tingling sensation, not where the blow is inflicted, but where the ulnar nerve, which has been struck, terminates on the inside of the hand, and especially in the little finger. In like manner, an accidental pressure made for a few minutes on the popliteal or sciatic nerve, will cause that peculiar tingling sensation in the foot which is commonly described by saying that the foot is asleep, and which continues for some time after the pressure has been taken away. Guided by the light of these facts, and of others analogous to them, the first question which you will ask yourselves when you are consulted in these cases, will be, whether there is any cause of irritation affecting the trunk of the nerve above, sufficient to account for the symptoms which are met with in the part to which its ultimate fibres are distributed?

A man was admitted into St. George's Hospital in the year 1808, complaining of a severe pain in the inside of his knee. The joint was carefully examined, but no marks of disease could be detected in it. In the thigh, however, there was an aneurism of the femoral artery, of the size of a small orange. This last disease had scarcely attracted the patient's notice. He said that he should be very well if it were not for the pain in the knee, and it was not until some trouble had been taken to explain to him the nature of his case, that he could be made to understand that the tumour was of any importance. Soon after the man's admission, Sir Everard Home (then Mr. Home) applied a ligature round the femoral artery, in the upper part of the thigh. On the instant of the artery being secured the tumour ceased to pulsate, and the pain in the knee ceased also. Some untoward circumstances occurred, and the patient died about four or five days

after the operation was performed. On inspecting the limb after death, the aneurism was found reduced to one-half of its former size; some branches of the anterior crural nerve, which passed over it, and which must have been kept on the stretch previous to the operation, were found to terminate in the part to which the pain had been referred, on the inside of the knee; and thus the cause of the pain was sufficiently explained. It was, in fact, a nervous pain, existing where there was no disease, in consequence of pressure on the nerves above.

A gentleman, in the year 1816, began to suffer from a gnawing pain in the left leg, referred to the course of the peroneal nerve from the foot to the knee. The pain by degrees became very severe, occupying at the same time a larger portion of the limb. The limb itself presented no appearance of disease. The patient consulted various surgeons, myself among the number. The disease went by the name of neuralgia, but the cause of it could not be discovered, and the remedies recommended were of no avail. After having lost sight of him for a considerable time, I was again sent for to see him in the year 1824. He was now dying with dropsy of the belly, and anasarca of the lower limbs. On examining the abdomen it was observed, as the fluid which it contained receded under the pressure of the hand, that there was a large solid tumour attached to the left side of the lumbar vertebræ, and extending into the pelvis. It was evident that this tumour must have pressed on the origin of the sciatic nerve, and thus it afforded a sufficient explanation of the pain which for so many years had been referred to some of its branches.

A case analogous to this is recorded by Dr. Denmark, in one of the volumes of the *Medico-Chirurgical Transactions*. A sailor received a wound from a musket ball in the arm: the wound healed, but the patient complained of an agonizing pain, beginning in the extremities of the thumb and fingers (except the little one), and extending up the forearm. His sufferings were such that he willingly submitted to the amputation of the limb, and the operation gave him complete relief. On dissecting the amputated limb, a small portion of lead, which seemed to have been detached from the ball when it had struck against the bone, was found imbedded in the fibres of the median nerve.

In each of these cases the cause of irritation was detected in the trunk of the nerve belonging to the part to which the symptoms were referred. But similar effects are produced where the actual seat of the disease is in that more essential part of the nervous system in which the nerve itself originates; that is, in the brain or spinal marrow. Thus caries of the dorsal vertebræ irritating the spinal marrow, produces pains and muscular spasms of the lower limbs; and the same disease affecting the superior cervical vertebræ, produces corresponding symptoms in the upper limbs.

A gentleman complained of severe pains referred to one side of the abdomen. After having been fixed for some time in one situation, it attacked another. No disease could be detected in the part apparently affected, and the pains were therefore regarded as nervous. It was observed at the same time that his powers of articulation were



affected, and that he spoke in an indistinct and drawling manner. This seemed to indicate that there was some disease in the brain, and the suspicion was confirmed soon afterwards, by the occurrence of epileptic fits, from which the patient continued to suffer during the few remaining years of his life.

I mention this case because I believe that a particular example will serve to impress the fact, which it illustrates, on your minds better than a mere general observation, and not because there is anything in it in any way remarkable or singular. You will, indeed, when engaged in practice, find nothing more common than this; that a patient consults you, who labours under some disease in the brain, but in whom a particular symptom, referred perhaps to a distant part of the body, is so severe, or so distressing, that he regards this as the original disease; and it is only after a diligent cross-examination that you are enabled to detect the existence of those other symptoms which serve to explain the real nature of the case. In many of these cases the cause of irritation seems to operate always on the same part of the sensorium, and there is little or no variety in the local indications by which it is rendered manifest. At other times it has no determined seat; it may affect at first one portion of the brain, to which a certain function belongs, and it may then affect another portion, whose function is entirely different, and the symptoms vary accordingly.

A gentleman laboured under a most severe pain, referred to the left side of the face; to which those whom he consulted gave the name of *tic douloureux*. While under the influence of this pain he was suddenly seized with a pain in the calf of the left leg, having precisely the same character with that which he had before experienced in the face. When the pain in the leg attacked him, that in the face did not subside altogether, but it abated so much that he suffered little or no inconvenience from it. At the end of a few days, as the pain left the leg, it returned with its usual severity in the face.

A lady became affected with a spasmodic affection of the sternocleido mastoideus muscle, producing what is commonly called a spasmodic wry-neck. This symptom continued unabated for a year, and then suddenly left her; but as the spasm in the muscle ceased, she fell into a state of mental depression amounting to insanity; and in this she continued during the whole of the second year. At the end of this period she recovered from the disordered condition of her mind, and the spasm of the muscle returned, continuing from that period up to the time of my being consulted, three or four years afterwards. I was consulted by another lady, in whom a neuralgic affection of the spine alternated with insanity.

When a calculus passes along the ureter from the kidney into the bladder, it frequently occasions a severe pain in the testicle of the same side. The most probable explanation of this sympathetic affection of the testicle is as follows: many of the nerves of the testicle derive their origin from the renal plexus, which also supplies the kidney, and which is formed by branches of the great sympathetic nerve. The irritating cause, namely, the calculus, operates in the

first instance on the nerves of the kidney, through which its influence is transmitted to the renal plexus; and from thence it is, as it were, reflected to the nerves of the testicle.

The symptoms which occurred in the following case may be accounted for on the same principle. A gentleman laboured under a scrofulous disease of the hip, producing caries of the bones and suppuration within the joint. The following symptoms existed in addition to those which the same disease usually produces. The smallest motion of the thigh induced an attack of excruciating pain, amounting to agony, attended with violent spasmodic contraction of the muscles which move the thigh. The limb was jerked in the most remarkable manner for several minutes, and the volition of the patient had no control over these distressing and extraordinary movements. After some time a tumour began to present itself externally on the anterior part of the limb, raising the femoral artery which lay pulsating on its surface. Combined with the disease of the hip-joint there were scrofulous tubercles and abscesses of the lungs, and of this last-mentioned disease he died, the attacks of pain and spasm having subsided for six or eight weeks before this event took place. Having the opportunity of doing so, I did not fail to examine the diseased hip and the parts connected with it with the greatest care. The bones composing it were soft, so that they were readily divided with a scalpel; the cancelli contained a yellow cheesy matter; and the cartilages had been destroyed by ulceration. The tumour was formed by an abscess situated among the muscles of the thigh on the anterior part below the hip-joint, but communicating with it. Two lymphatic glands enlarged to the size of large walnuts, were found situated beneath the skin on the anterior part of the thigh, below the outer extremity of Poupert's ligament. It so happened that a considerable branch of the lumbar nerves lay over each of these enlarged glands, being thus kept stretched and tense in the same manner as the strings of a violin are stretched over the bridge of the instrument. These nerves had the same origin with those which supply the muscles on the anterior and inner part of the thigh, and the peculiar circumstances under which they were placed seem to afford a sufficient explanation of the peculiar symptoms, under which the patient laboured. Nor is the view of the case different if we refer the symptoms to the pressure of the abscess, since this affected the nerves partially, whereas the convulsive action of the muscles was general, and the psoas magnus muscle, which was situated above the abscess, was not less liable to spasm than those which were situated below.

In cases similar to that which I have just mentioned, where nerves have a common origin, it is easy to suppose that an impression made upon one nerve should be communicated to those parts which are supplied by the other. But an impression made on one part of the body will often produce a nervous affection elsewhere, at a distance from the original seat of the disease, and where no such obvious explanation of the fact presents itself. A disease in the liver produces a pain in the right shoulder; a disease in the heart produces a pain in the back.



A gentleman awoke in the middle of the night, labouring under a severe pain in one foot ; at the same time that some other sensations to which he was not unaccustomed, indicated the existence of an unusual quantity of acid in the stomach. To relieve the latter he swallowed a large dose of an alkaline medicine. Immediately on the acid in the stomach having been thus neutralized, the pain in the foot left him.

The late Dr. Wollaston was accustomed to relate the following history:—He ate some ice-cream after dinner, which his stomach seemed to be incapable of digesting. Some time afterwards, when he had left the dinner-table to go to the drawing-room, he found himself lame from a violent pain in one ankle. Suddenly he became sick ; the ice-cream was rejected from the stomach ; and this was followed by an instantaneous relief of the pain in the foot.

A gentleman consulted me concerning a pain in one instep. The pain was severe, causing lameness, so that he walked with difficulty ; but there was neither swelling, nor, except the pain, any mark of inflammation. I prescribed some remedies, which, however, were of no avail. One morning he called on me, still suffering from the pain in the foot, and so lame that he could not get out of his carriage, and walk into the house without the assistance of his servant. Now, however, he complained of another symptom : he had a difficulty of making water, and a purulent discharge from the urethra. He had laboured under a stricture of the urethra for many years, and had occasionally used bougies. Of late the stricture had caused more inconvenience than usual ; but he had abstained from mentioning it, thinking that it would be better that he should (if possible) be relieved of the pain in the foot before any treatment was adopted on account of the stricture. Under these circumstances I introduced a bougie, which penetrated the stricture and entered the bladder. Immediately on the bougie having been used, the pain in the foot abated ; and in less than a quarter of an hour he left the house free from pain, and walking without the slightest difficulty. This happened some years ago, but I have seen the patient at intervals ever since ; and, from a most careful observation of his case, he and I are both satisfied that the pain in the foot is connected with the disease in the urethra, and we have never found anything to relieve it except the introduction of the bougie.

A lady consulted me concerning a pain to which she had been for some time subject, beginning in the left ankle, and extending along the instep towards the little toe, and also into the sole of the foot. The pain was described as being very severe. It was unattended by swelling or redness of the skin, but the foot was tender. She laboured also under internal piles, which protruded when she was at the water-closet, at the same time that she lost from them sometimes a large and sometimes a smaller quantity of blood. On a more particular inquiry, I learned that she was free from pain in the foot in the morning ; that the pain attacked her as soon as the first evacuation of the bowels had occasioned a protrusion of the piles ; that it was especially induced by an evacuation of hard feces ;

and that if she passed a day without any evacuation at all the pain in the foot never troubled her. Having taken all these facts into consideration, I prescribed her the daily use of a lavement of cold water; that she should take the Ward's paste (*confectio piperis composita*), three times daily, and some lenitive electuary at bedtime. After having persevered in this plan for the space of six weeks, she called on me again. The piles had now ceased to bleed; and in other respects gave her scarcely any inconvenience. The pain in the foot had entirely left her. She observed that in proportion as the symptoms produced by the piles had abated, the pain in the foot had abated also.

Now in such cases as these, you will at once perceive that there is no direct communication between the nerves of the parts affected that will afford a reasonable explanation of the occurrence of the sympathetic pain; and you will naturally inquire, how then is the sympathetic pain produced? To this question I would answer, that in all probability it is in the brain itself that the communication is made, the impression being first transmitted to the sensorium, and from thence reflected to the nerves of the part which is secondarily affected. If you dissect the brain according to Reil's method, having first hardened it by maceration in alcohol, you will find it splitting into fibres, passing in various directions, many of which may be demonstrated as connecting even the most distant convolutions of the cerebrum with each other: and if, with the limited knowledge which we at present possess, we venture to speculate on this obscure but interesting subject, we may easily be led to suppose that an impression on one part of the body should, by means of these communicating fibres, produce a disordered sensation in another part. It is not more improbable that this should happen than it is that the whole fabric of the nervous system should sympathize with an affection of a particular nerve, as is the case in traumatic tetanus, and on many other occasions of which the experience of surgeons will furnish numerous instances. I shall mention here one remarkable example of the kind which fell under my observation. An officer in the army received a wound (in action) from a musket-ball in the leg. The wound healed, but the ball remained lodged in the flesh, in some deep-seated situation where it could not be felt externally, and gave the patient no inconvenience. After some time the ball changed its place, so that it became perceptible to the touch; but in its new position it occasioned symptoms such as had never existed previously. There were convulsive twitches of the muscles of the limb, occurring at irregular periods, and sometimes followed by a fit, in which there were general convulsions, as in epilepsy. At this time (if I may judge from the patient's own account) the ball might have been readily extracted. Unfortunately the opportunity was neglected, and soon afterwards the ball again shifted its place. Probably it went back to the situation it had originally occupied; at any rate the spasms of the muscles were relieved, and there was no recurrence of the epileptic fits. I presume that these latter symptoms were the consequence of the ball, when it had left its original position, press-



ing on some nervous filament in such a manner as that a peculiar irritation was excited in it, and transmitted to the brain.

As these nervous affections may occur under such different circumstances, and may arise from such different causes, you will not be surprised to find that they assume a great variety of characters, so that it is impossible for me to do more than give you a general notion of what you will observe respecting them in the course of your professional practice; your own experience will enable you hereafter to supply the deficiencies of my description.

One remarkable feature of these diseases, whether they present themselves in the form of nervous pains or muscular spasms, is that they seem to be suspended during sleep. A patient suffering from the pains of tic douloureux in the face, may, for a time, be prevented falling asleep, but if once asleep, his sleep is likely to be sound and uninterrupted for many hours. In like manner, when a patient is affected with the spasmodic wry neck, the muscle which is the seat of the spasm, probably the sterno-cleido-mastoideus, becomes relaxed, and remains so while sleep continues, perhaps during the whole night. I do not assert that there are absolutely no exceptions to this rule, but I am much mistaken if the exceptions are not comparatively rare. Even during his waking hours, the sufferings of the patient are seldom constant. Nervous pains especially are intermittent, occurring in paroxysms, and then either subsiding altogether, or becoming very much abated. The time of such irregular intermissions varies from a few minutes to several hours, or even to several days. The patient then says that the pain comes on by spasms, and even medical men are apt to hold the same language. This, however, is not a very correct application of the term spasm. Spasm means contraction, and the use of it ought to be restricted to involuntary contractions of the muscles. In applying it to nervous pains as well as to muscular contractions, you confound together symptoms which, although they may arise from the same causes, are in themselves dissimilar, and you lead yourselves and others into error. Even where there are no absolute intermissions, the intensity of the symptoms varies at different times, according to the state of the general health, the state of mind, and various other circumstances.

Nervous pains vary not only in degree, but in kind. They are sometimes described as dull and wearying, at other times, and more frequently, as sharp, darting or stabbing. A gentleman, who laboured under no other symptoms of disease, lost the sense of touch in one arm, and forearm and hand, so that the whole limb was benumbed, and in the place of the natural sensations, experienced a sense of heat and burning, recurring at irregular intervals. Nervous pains may, in the first instance, be readily distinguished from those produced by inflammation by the absence of throbbing, by their not being increased by pressure; by there being no evident turgescence of the small vessels. But there is more difficulty in the diagnosis afterwards. As the commonest event may prove a source of annoyance to an irritable mind, so will nerves, which have been kept for some time in a state of irritation, transmit every impression that is

made on them, to the brain, with a disagreeable or painful sensation superadded to it: in other words the part affected will be tender to the touch. And more than this: the tenderness may be followed by increased vascularity; by a slight degree of swelling; by actual inflammation. I do not mean to assert that any very active inflammation will be established, such as will end in suppuration and abscess, or ulcer; it will be moderate in degree, but it will be inflammation nevertheless, and marked by the usual symptoms. In a patient, who had laboured for some time under pain in the testicle, depending on a calculus passing down the ureter into the bladder, the testicle became tender and considerably swollen. In a gentleman, who suffered for a great length of time from what was regarded as a most severe *tic douloureux* in the face, at first the parts to which the pain was referred retained their natural appearance, but ultimately they became swollen, from an effusion of serum into the cellular texture, and so exquisitely tender that they would not bear the slightest touch.

I have said that nervous pains are subject to irregular intermissions. But in some instances the intermissions are regular, and the returns of the pain are periodical, like those of an ague or intermitting fever. I have known such intermitting and periodical nervous pains to alternate with ague. In fact, the two diseases depend on the same state of the general system; and quinine, or arsenic, which would cure the intermitting fever, will also cure the intermitting pain. Here the character which the pain assumes, leads to an important rule of practice; but in other cases, as far as my own experience has yet gone, it teaches us but little as to the origin of the disease, or the remedies by which it is to be cured. What I am now about to mention renders it probable that the kind of pain depends (at the least) as much on the particular structure of the part, to which it is referred, as on the particular cause which produces it. It has been stated by Sir Henry Hallford, that the *tic douloureux* in the face arises from the irritation of the nerves, occasioned by a portion of dead or carious bone, and I have no doubt that it is so in some instances. I have seen one, if not two cases, which confirm Sir Henry Hallford's observation. But I also can entertain no doubt that it may arise from other causes. In one case, which I saw with Mr. Green and Mr. Freeman, the existence of epileptic fits, a ptosis of one eyelid, and some other symptoms, led us to believe that the pain in the face was the consequence of some disease in the brain. The patient died and the appearances on dissection afforded ample proof of the correctness of the opinion which we had been led to form during the patient's lifetime. In other instances it appears to be merely the consequence of a disordered condition of the digestive organs. But I am not aware that in these different cases there is any essential difference in the symptoms of the disease, or that it is possible for us, judging merely from the kind of pain, to pronounce that it arises from this or that cause, or that it is to be cured by this or that remedy.

Although there is no part of the body which may not, at one time or another, be the seat of these nervous affections, it would appear



that some parts are more liable to them than others. They are met with less frequently in the viscera, which are supplied by the great sympathetic nerves, than in other parts. Nervous pains are more severe, and perhaps, on the whole, more common, in those parts which receive their nerves from the fifth pair, as the face, the eye, the tongue, than in any other individual part. Muscular spasms are common in the muscles of the neck, especially in the sterno-cleido-mastoideus. I am inclined to believe, also, that they occur more frequently in the upper limb than in the lower. It is not uncommon to see one hand and arm in a state of constant tremulous motion, there being no other indication of disease. I have seen several cases in which a muscular spasm of the upper limb has shown itself in the following manner. The patient experiences no inconvenience from it until he uses the limb; for example, until he sits down to write. Then, when he has gone so far as to have written a few letters, some of the muscles act involuntarily, and jerk the hand in a direction contrary to that which was intended; so that instead of completing the word which was begun, the pen makes a long scratch on the paper.

A lady complained of pain in the head, and her mouth was drawn to one side; and hence she was supposed to suffer from paralysis of the muscles of one side of the face. However, when I was consulted respecting her, I observed that there were nearly constant twitches of the cheek and eyelids on that side to which the mouth was drawn; and on more minute examination, I was satisfied that the distortion of the mouth arose, not from the muscles on one side of the face being paralytic, but from those on the opposite side being in a state of spasm. The case precisely resembled that of a patient with spasmodic wry neck, except that the disease influenced a different set of muscles, namely, those supplied by the fascial nerve, or the *portio dura* of the seventh pair.

Perhaps there are no muscles in the body which are, on the whole, more liable to have their actions deranged under the influence of nervous disorders, than those of the pharynx and œsophagus. In not a few of those cases, which have been confounded together under the general appellation of stricture of the œsophagus, the disease is either a spasmodic, or a partial paralytic affection of these parts, and the patient is to be cured, not by the introduction of bougies into the œsophagus, but by other means.

A lady consulted me concerning symptoms which were ascribed to a stricture of the œsophagus. She was unable to swallow the smallest morsel of solid food, so that she was compelled to subsist entirely on liquids, and even these she swallowed with great difficulty. These symptoms had been coming on for upwards of three years. I introduced a full-sized œsophagus bougie, which entered the stomach without meeting the slightest impediment. From this and other circumstances I was led to conclude that the difficulty of deglutition was merely a symptom of some other disease. The lady's face was bleached, as if she had suffered from repeated attacks of hemorrhage, and her feet were in some degree œdematous. On inquiry I.

found that she had long laboured under internal piles, from which had taken place repeated discharges of blood. To this last disease then I directed my chief attention, prescribing a cold lavement to be injected every morning; and at the same time a solution of the sulphate of iron, and sulphate of quinine, to be taken three times daily, by the mouth. When this plan had been persevered in for three weeks the piles were much relieved; they no longer protruded externally; there had been no recurrence of hemorrhage; her cheeks were less pale; and she swallowed with comparative facility. At the end of six weeks more the piles occasioned very little inconvenience; she had lost no more blood; her general health was much improved; and there was so little difficulty of deglutition that I had no hesitation in recommending that, after her return to the country, she should swallow a bolus of Ward's paste three times daily, with a view to the cure of the hemorrhoidal disease.

The pathological history of these local nervous affections constitutes in itself a most curious and interesting object of research; but it has another, and still stronger claim on your attention. Your patient wishes to be cured; he has of course no other reason for consulting you. Now you may supply yourselves with a list of what are called nervous remedies; prescribing, for example, the carbonate of iron first, changing this for the extract of belladonna, and that for something else; trusting that accident will at last enable you to hit on the right expedient; but you will do little good by the adoption of such a loose and empirical method of practice. If you would cure your patient, you must study each individual case that comes before you, pathologically; endeavour to trace the symptoms to their true origin; and if you can succeed in doing so, you will, in many instances, learn at the same time in what manner a cure is to be effected; while in others, in which the disease does not admit of a cure, you will learn this also: you will be enabled to avoid tormenting your patient with useless remedies; and at any rate you will be satisfied you can do as much for him as your neighbours.

It is not to be supposed that in these cases any permanent benefit can arise from applications made to the part to which the symptoms are referred, the cause on which they depend being elsewhere; and the first thing that you have to attend to in the treatment is, that you do not fall into the error of regarding the symptoms as constituting the original disease. A patient applies to you complaining of a pain in the testicle; but the testicle appears to have its natural structure, and (except the pain) bears no marks of inflammation. You inquire further, and find that the pain is not constant; that it is especially induced by exercise, and that it subsides when the patient is in the horizontal posture. Examine the groin after he has taken a long walk, and you will perhaps find an incipient hernia; a small portion of bowel just attempting to protrude through the abdominal ring. You apply a truss, which supports the hernia, and cures the pain in the testicle. If you had been careless in your investigation of the case, and had applied leeches and lotions to the testicle, you would, to say the least, have plagued your patient to no purpose.



Another person applies to you concerning a spasmodic wry neck. If you at once conclude that the disease is where it shows itself, and divide the tendon of the sterno-cleido-mastoideus muscle, what is the consequence? The patient undergoes a certain quantity of pain in the operation, and to no purpose; for before the wound is completely cicatrized, the divided tendon has again become fixed by adhesion to the neighbouring textures, and the contraction of the muscle, and the twisting of the neck, are as bad as ever. I shall relate a case in which a patient underwent a severe and painful operation to no purpose, in consequence of such a want of discrimination on the part of the surgeon. A sailor had received a severe wound in the ham, I believe, from a musket ball. The wound healed, but not until after a considerable time, and the patient was left with a contracted leg, and suffering from a most agonizing pain in the foot. This state of things having existed for a considerable time, and no benefit having been derived from any of the remedies employed, the poor fellow wished to lose the foot. The surgeon, under whose care he was, therefore, amputated the leg. But, unfortunately, he amputated it, not above the knee and above the injury of the nerve, but below the knee and below the injury. I scarcely need tell you the result. The pain continued as severe as ever, and it was not relieved until amputation had been performed a second time higher up in the limb.

It is, however, reasonable to conclude, that few among you will be guilty of a mistake so palpable as this. But in many instances, as I have already expressed to you, the diagnosis is really difficult, and it will require a very minute observation, and much exercise of judgment for you to understand the real nature of the case, so as to be enabled to determine where the primary disease is situated, and in what it consists. You must take into the account not only the present circumstances, but the former history; and your observations, instead of being limited to the particular symptoms concerning which you are consulted, must extend to the state of the animal functions generally; and where more light is wanted, you must be satisfied to wait and watch the further progress of the disease, and the effects produced on it by the remedies employed.

If the original disease operates immediately on the nerves of the affected part, producing in it pain, or muscular spasm or paralysis, you will have first to consider how far it is within the reach of topical remedies. If a tumour presses on a nerve, or if some foreign body, as a musket ball, or a piece of dead bone, irritates its surface, or is entangled in its substance, perhaps the tumour or the foreign body may be removed by a surgical operation, or the tumour may be reduced by other means. If this cannot be accomplished, or if the nerve itself be altered in structure, either from disease or injury, it will become a matter for consideration, whether the limb should be amputated, or whether the nerve should be divided. It is only under these circumstances that any advantage can be expected to arise from the division of the nerve. In ordinary cases of neuralgia, where the disease on which it depends is in the brain, or in some other distant part of the body,

or where it is connected with some dérangement of the general health, it is evident that such an operation cannot be recommended on any sound principle, and it need be a matter of no surprise that where it is performed it should so generally fail. Where nothing better can be done, and a cure is not within your reach, a palliative treatment may be productive of some advantage, and you may endeavour to mitigate the patient's sufferings by the use of the local vapour bath, or by the application of the opium, or hemlock, or what is still better, the belladonna plaster.

In other cases the success of your practice must mainly depend on these circumstances: whether you are able to discover the primary seat of the disease, and whether, if it be discovered, it is of such a nature as to be under the influence of remedies. If you refer to what I have said in former parts of the present lecture, you will find that I have anticipated much of what belongs to this part of our inquiries. I shall not trouble you by needless repetitions. There are some points, however, on which I feel it my duty to make some additional remarks.

The mucous membrane of the stomach and intestines presents a very extended surface, on which a multitude of nervous filaments are distributed, maintaining an extensive sympathy between these organs and the rest of the system. This membrane is subject to various causes of irritation, to which nervous affections showing themselves even in distant parts of the body may not unfrequently be traced. Hence it is that these diseases are in some instances relieved, or cured, by an adherence to a well-regulated diet, by the exhibition of purgatives, of what are called alterative medicines, and of others which tend to improve the disordered secretions of the stomach and liver.

In a great number of instances nervous pains are manifestly connected with a disposition to gout, and the colchicum, combined with other remedies, will contribute to their cure.

I have already adverted to cases in which various pains assume an intermitting and periodical character, having a manifest relation to cases of intermitting fever. According to my experience there is no part of the body in which such pains may not occur, and when they occur daily, or on the alternate days, they are always relieved by the exhibition of the sulphate of quinine, or of the cinchona, combined with arsenic. But large doses of these medicines are sometimes required. A respectable medical practitioner consulted me, believing that he laboured under a disease of the spine. He complained of pain, which he referred to the inferior dorsal vertebræ, and which was so severe that he could, as he said, scarcely endure it. On inquiry, I learned that the pain attacked him always at a particular period of the night; that it lasted for a certain number of hours, and that he was free from pain, or nearly so, in the intervals. I recommended that he should take the sulphate of quinine procured at Apothecaries' Hall. He took as much as fifteen or sixteen grains daily without any decided amendment: but I was so satisfied of the efficacy of the remedy in such a case, that I advised him to increase



the dose still further. At last he took half a drachm of the sulphate of quinine daily, and this effected his cure.

Nervous affections of the same kind not unfrequently show themselves in other ways. Still they are cured by the same remedies. It would be an endless task for me to describe all the varieties of this disease which you will meet with in practice; and I shall content myself with furnishing the following examples.

In my lecture on the diseases of the urinary organs I have noticed the case of a gentleman, who had long laboured under a stricture of the urethra; but from which, introducing a bougie occasionally for himself, he suffered little. At last he became affected with a periodical retention of the urine, recurring at a certain hour every night. The retention continued for some hours, and then subsided. The introduction of the catheter gave him relief at the time by emptying the bladder, but it did not remove the spasm, and if the urine was secreted rapidly afterwards, a second introduction of it was required. After this state of things had continued for some time, I prescribed for him two grains of the sulphate of quinine to be taken every six hours. On the first night after he began to take it the retention recurred, but he had no attack afterwards.

A lady about sixty years of age complained of a most distressing sensation of thirst, beginning about ten o'clock in the forenoon, continuing for five hours, and recurring daily. A slight degree of chilliness preceded the attack; and while it lasted, although the sense of thirst was such as to produce absolute misery, there was no perceptible dryness of the mouth and fauces, and the secretion of urine was natural. These symptoms had existed for several weeks. The patient appeared to labour under no other disease: she had, however, begun to lose flesh, and her complexion was sallow. The same symptoms had attacked her four years ago. At that time they continued for six months, leaving her thin and debilitated. I prescribed for her three grains of the sulphate of quinine to be taken three times daily. I have not seen her since; but at the end of four days I received a note to the following effect:—"Mrs. ———, the thirsty lady, has the pleasure to say that she is very much better; and she is much obliged to Mr. Brodie for his advice. She returns to the country to-morrow."

A lady suffered from a neuralgic affection of the face. Her medical attendant prescribed a preparation of valerian, and the pain in the face subsided; but immediately afterwards she began to experience a pain in one foot. This pain recurred in the early part of every evening. After a short time it was followed by redness of the skin, and tumefaction of the subjacent parts near the bases of the toes. These marks of inflammation continued to increase for some hours, and then subsided, leaving the foot of its natural appearance and free from pain. This state of things, at the time of my being consulted, had existed with little variation for several months. She was advised to take the sulphate of quinine. On the following evening the attack was less severe than formerly, and in the course of three or four days the symptoms had entirely subsided.

In this case the inflammation of the foot was manifestly the consequence of the intermitting neuralgia. In that which follows, the inflammation of the leg formed the most prominent feature of the disease; yet from its resemblance to the last we can scarcely doubt that it ought to be considered as belonging to the class of nervous affections.

A lady laboured under an inflammation of her leg. The whole leg was swollen from the toes to the knee, the skin being red, painful and tender. These symptoms had existed for several weeks; the usual remedies had been employed, and no amendment had taken place; yet the inflammation did not proceed further, and there were no signs of suppuration. At last I observed that the symptoms varied considerably; that sometimes the redness, pain, and swelling had nearly subsided, that at other times they were as strongly marked as ever; and that these variations always took place on the alternate days. She was now directed to take the sulphate of quinine. The effect was immediate, and a few days completed the cure.

In those cases in which the local nervous affection depends on an organic disease of the brain, or spinal marrow, it is evident that the patient has no chance of actual cure. Other nervous symptoms show themselves in succession, such as a stumbling walk, a drawling speech, epileptic fits, derangement of the intellect, and at last a stroke of apoplexy occurs as the immediate prelude of death. But here months or years may elapse before the disease reaches its fatal termination; and in the meantime you attain an important end, if you can relieve the local symptoms. Now where these appear in the form of muscular spasms or paralysis, according to my experience, remedies are of little avail. The spasms may subside spontaneously, but they are not to be relieved by art. It is different, however, with respect to nervous pains; and for these, local applications of hemlock or belladonna, stimulating liniments combined with laudanum, and even blisters, may be employed with advantage, removing the pain, perhaps for a time, perhaps permanently, although the disease on which the pain depends is slowly but progressively advancing.

Another very extensive class of local nervous affections remains to be investigated. To these I shall call your attention in the next lecture.



## LECTURE XXVIII.

## VARIOUS FORMS OF LOCAL HYSTERICAL AFFECTIONS.

WHEN I was formerly engaged in the study of the diseases of the joints, having, at the period to which I refer, few opportunities of investigating the subject except in my hospital practice, I occasionally met with cases, in which a particular joint was affected with pain, and a great degree of morbid sensibility, attended occasionally with some degree of tumefaction of the soft parts, although the characteristic symptoms of the ordinary diseases to which these organs are liable were wanting, and the usual consequences of abscess and destruction of the joint did not ensue. For a long time these cases occasioned me great perplexity, and it was not until after I had published the first edition of my Treatise on the Diseases of the Joints that the occurrence of the case, which I am about to describe, first led me to suspect the real origin of the symptoms, which I had not comprehended formerly.

I was consulted concerning a young lady who complained of severe pain and a morbid tenderness of the knee, in the first instance attended with no perceptible enlargement of the joint. The remedies which, with such knowledge as I then possessed, I was led to recommend, gave her no relief; and after some time a slight degree of tumefaction took place, depending, as it seemed, either on a fullness of the small vessels, or on an effusion of lymph or serum into the subcutaneous cellular texture. She had been in this state for a considerable time, when she was seized with a succession of violent paroxysms of hysteria, which terminated in an hysterical affection of the brain; so that she lay in a state approaching to that of coma, with dilatation of the pupils of the eyes. She was now attended by the late Dr. Babington and myself. I do not undertake to say whether the disease yielded to the remedies employed, or reached its natural termination; but from one or other of these causes, the patient recovered of the last-mentioned symptoms, and from that time she never complained of her knee.

Not long afterwards another young lady was brought to me, labouring under what had been supposed to be a scrofulous disease of the wrist. The resemblance of this case to that of the last-mentioned patient led me to doubt the correctness of this opinion, and the results proved my doubts not to be without foundation. She also was seized with a succession of violent paroxysms of hysteria; and when, after the lapse of many days, she had recovered from them, the disease of the wrist had vanished.

It seemed impossible to doubt that in each of these cases there was some connection between the local symptoms and the constitutional disease under which the patient laboured; and a great number

of other cases, which fell under my observation afterwards, confirmed me in the opinion: that where there is that state of the general system, whatever it may be, which produces the phenomena of hysteria, it is not uncommon for a particular joint to be affected with pain and morbid sensibility, such as may lead a superficial observer to believe that it is the seat of some serious local disease, although no such disease in reality exists.

In the second and subsequent editions of my Treatise on the Diseases of the Joints, I have given some account of these local hysterical affections. I trust that what I have there stated may have been not wholly unacceptable to those who are engaged in the practice of our art; but the subject is one of great interest both to the scientific pathologist and to the practical surgeon, and believing that I can furnish you with some information respecting it, beyond that which is to be found in these publications, I am led to call your attention to it on the present occasion.

I have already mentioned, that when my opportunities of studying these diseases were limited to what I saw in the wards of the hospital, these affections of the joints fell occasionally under my observation. Since I have been engaged in a large private practice, they have presented themselves, I may say, without exaggeration, almost daily. This is easily explained: "*Fæminarum enim paucissimæ,*" says the sagacious and observing Sydenham, speaking of hysteria, "*ab omni horum adfectuum specie prorsus liberæ sunt, si istas excipias quæ laboribus adsuetæ duram vitam trahunt.*" The liability to hysteria is, in fact, among females, one of the severest penalties of high civilization. It is among those who enjoy what are supposed to be the advantages of affluence and an easy life that we are to look for cases of this description, not among those who, fulfilling the edict of the Deity, "eat their bread in the sweat of their face." I do not hesitate to declare that among the higher classes of society, at least four-fifths of the female patients, who are commonly supposed to labour under diseases of the joints, labour under hysteria, and nothing else.

Frequently the symptoms are referred to the hip-joint. They then have a considerable resemblance to those of diseases in the bones or cartilages, yet a minute examination of the case will rarely leave you in doubt as to your diagnosis.

There is pain in the hip and knee, which is aggravated by pressure and the motion of the limb, and the patient often lies fixed in one position on the bed or sofa. You will say, "are not these indications of a diseased hip-joint?" But observe further. The pain is not in general fixed in any one part: it belongs to the whole limb. The patient winces, and sometimes screams, when you make pressure on the hip, but she does the same if you make pressure on the ilium, or on the side as high as the false ribs, or on the thigh, or even on the leg, as low as the ankle; and everywhere the morbid sensibility is chiefly in the integuments. If you pinch the skin, lifting it at the same time off the subjacent parts, the patient complains more than when you forcibly squeeze the head of the thigh-bone



into the socket of the acetabulum. As her attention is more directed to the examination, so the pain, which she suffers from it, is aggravated; and if her mind be occupied in conversation, she will scarcely complain of that, which would have occasioned torture otherwise. Then there is no wasting of the *glutæi* muscles, and no flattened appearance of the nates; and the aspect of the patient is different from that which you would expect to find if the bones and cartilages of a joint were in a state of ulceration. Neither are there those peculiar and painful startings of the limb at night, attended often with frightful dreams which mark the existence of this last disease. The pain will sometimes prevent the patient falling asleep, but, if once asleep, she sleeps soundly for many successive hours; and this state of things may continue for weeks, or months, or even for years, without leading to abscess, or any further ill consequences. There may be a suspicion of abscess (I have known this in a great number of instances), but the suspicion is never realized. Sometimes there is a general tumefaction of the thigh and nates, the consequence either of a turgid state of the small vessels, or of an effusion into the cellular texture (I suppose of the former, as the parts do not *pit*, or remain indented after pressure); but this is entirely different from the swelling of an abscess. In a few rare instances there is a more defined and circumscribed swelling, but still it is altogether different from that of abscess. There is no perceptible fluctuation, and I can compare it to nothing better than a wheal of urticaria of unusual magnitude. A careful examination will always enable you to distinguish these swellings from abscess. For the satisfaction of others, I have sometimes made a puncture with a grooved needle, or some other convenient instrument, the introduction of which would have detected matter, if matter had existed.

I have said that, in these cases, there is no wasting of the *glutæi* muscles, and no flattened appearance of the nates. It is, however, not uncommon to find much alteration in the figure of the parts, of another kind; namely, a bulging of the pelvis posteriorly, at the same time that it is elevated, on the side of the disease, so as to make an acute, instead of a right angle, with the column of the vertebræ. Of course, under these circumstances, the limb is apparently shortened, and when the patient stands erect, the heel does not come in contact with the ground. A superficial observer may be led to believe that there is an actual dislocation of the hip; and, indeed, it requires a careful examination to enable the surgeon to understand that all this strange distortion is but the result of the predominant action of certain muscles, and of a long-continued indulgence in an unnatural position.

When the symptoms are referred to the knee, they bear a near resemblance to those which have been just described. There is great tenderness of the joint; but the patient suffers more from pinching the skin than from pressure, and the morbid sensibility extends for some distance up the thigh, and down the leg, perhaps as low as the foot and ankle. She suffers less from an examination when the attention is fixed on other matters than when it is directed to the

affected parts; and she does not usually complain when pressure is made on the heel, so as to press the articulating surface of the tibia against that of the femur, provided that care be taken at the same time to produce no motion of the joint. In most instances the leg is kept extended on the thigh, whereas, in cases of real disease in the knee-joint, it is usually a little bent. The symptoms may continue in this case, also, without any material alteration for an indefinite time; for weeks, or months, even for years, the joint retaining its natural size and figure: but occasionally a slight degree of tumefaction is observable especially on the anterior part, over, and on each side of, the ligament of the patella. This tumefaction is not to be confounded with a general enlargement of the joint, by which surgeons are frequently perplexed and misled, the result not of the disease, but of the remedies employed. I refer to cases which have been misunderstood, and mismanaged by the application of blisters, issues, and a succession of various counter-irritants.

What I have now stated may be sufficient to enable you to understand the nature of the symptoms which you may expect to find where these hysterical affections occur in the other joints of the extremities. The following observations are equally applicable to all these cases, and while they are necessary to complete the history, will be found of use in enabling you to form a correct diagnosis.

The patients thus affected are, for the most part, not much above the age of puberty.

In many instances they labour under some irregularity with respect to menstruation; while in others this function is in no respect different from what it is under circumstances of perfect health.

Those who labour under habitual coldness of the hands, have a weak small pulse, and afford other indications of a feeble circulation, are more liable than others to suffer in this manner; yet occasionally we find these symptoms existing in combination with a florid countenance and a sufficient development of animal heat.

In some instances the joint to which the symptoms are referred, and even the whole limb, is affected with a remarkable alternation of heat and cold. Thus in the morning the limb may be cold, and of a pale or purple colour, as if there were scarcely any circulation of blood in it; while towards the afternoon it becomes warm, and in the evening is actually hot to the touch, with the vessels turgid and the skin shining. This state of things is often a source of serious alarm to the patient, and even to the medical attendant, but I never knew it to be followed by any ill consequences.

The majority of the patients thus affected exhibit other proofs of their liability to hysteria. Sometimes they have been subject to the usual paroxysms of hysteria, which have ceased on the local symptoms showing themselves; and a recurrence of the former has been followed by an abatement of the latter, or by complete recovery from them.

Not unfrequently the origin of these symptoms may be traced to a severe illness, which has left the patient in a state of great physical exhaustion; at other times they are as clearly to be attributed to



some moral cause having a depressing influence on the constitution. In like manner the agency of moral causes, especially of those which compel the patient to make much physical exertion, often leads to her recovery. But we must not be led by this last-mentioned circumstance to adopt the harsh conclusion, that these symptoms exist only in those who are of a fanciful and wayward disposition. Young women of the highest moral qualities, and of the strongest understanding, are not exempt from these maladies; but it must at the same time be acknowledged that a cure is more easily attained in them than it is in others.

Although there are none of those painful and involuntary startings of the limbs which occur in combination with caries of the joints, spasmodic actions of the muscles of the limbs are not uncommon in the cases of which I am now speaking. In some instances convulsive motions of the limbs are produced, by pinching, or even by lightly touching the integuments. These bear no very distant resemblance to the movements of chorea; and it is worthy of notice, that they do not occur if it can be managed, at the same time, that the attention of the patient should be otherwise directed. I have also known them to take place independently of any manifest exciting cause. In some cases which have fallen under my observation, the limb was at irregular periods violently agitated, so as almost to throw the patient off her couch.

In these cases there is always a sense of weakness in the limb, which for obvious reasons becomes aggravated in proportion as the muscles have been for a longer time in a state of inaction. While the pain and morbid sensibility of the joint are gradually subsiding, this sense of weakness increases, until at last it is the predominant symptom. Under these circumstances the patient often says, "I have no pain, but I cannot walk, because the limb is so weak." Weakness of the muscles, however, is not the only circumstance which interferes with the speedy recovery of the use of the limb in these cases. The tunics of the small blood-vessels, when the limb has been long kept in the horizontal posture, seem to partake of the condition of the muscles; and when the foot is first put to the ground, the skin assumes, in consequence, a red colour, sometimes amounting to a purple hue, as dark as that which, when limited to a particular spot, is often the precursor of a vesication.

The symptoms which have been described for the most part come on gradually. In the majority of cases they subside gradually also; but sometimes it is otherwise, and they vanish all at once without any evident cause. For example: in the year 1834 I was consulted respecting a young lady labouring under a well-marked hysterical affection, simulating disease of the hip-joint. As she was not a resident in London, I had no opportunity of watching the progress of the case, but I have lately received the following account of it from Dr. Mortimer, the surgeon of Haslar Hospital:—Her symptoms had continued nearly unaltered for nearly two years, when one night, on turning herself in bed, she said that she had a feeling as if

something had given way in her hip, and from that moment she was quite well.

Another young lady was brought to London for my opinion in October, 1833. She also was supposed to labour under a disease of the hip-joint. After a careful examination of her case, I was satisfied that it was one of hysterical affection, and that there was no actual disease of the joint. I recommended her to leave her couch, to which she had been confined, and to take exercise, especially on horseback. Being a sensible and well-disposed person, she followed this advice, in spite, I doubt not, of a good deal of inconvenience in the first instance. After the lapse of a year, I received from her father the following statement respecting her:—"In pursuance of your advice, she began to use the limb more freely, but with little alteration as to pain and lameness until about six weeks ago, when, by a fall of the donkey on which she was riding, she was thrown over the animal's head, standing on the foot of the lame limb, with her weight upon it. She felt immediately what she describes as a sudden snap, as if something near the joint had given way. This was attended with a violent acute pain, which, however, lasted only a short time. She was replaced on the donkey, and rode home, a distance of four miles. To her great surprise the former habitual pain of the limb had entirely discontinued, and there has been no return of it since. She was able to walk up and down stairs without difficulty or pain, and now walks a considerable distance, using the one leg as freely and as well as the other. Her general health is improving rapidly, although she is still weak. There has been no hysterical fit since the accident; in short, the cure has been complete." However, the cure was not permanent. Three months afterwards the complaint recurred, having the same character as formerly, except that it was not now combined, as it had been in the previous attack, with other hysterical symptoms. She was at this time on the continent, and I have not heard the result of the case.

I have hitherto described these cases as if the symptoms were peculiar to the female sex; but it is not so in reality; and I have known several (though by comparison certainly rare) instances of males being affected in the same manner. I employ the term hysteria because it is in common use, and because it would be inconvenient to change it for another; but the etymology of it is undoubtedly calculated to lead to a great misapprehension with respect to the pathology of that disease. It belongs not to the uterus, but to the nervous system; and there is no one who is much engaged either in medical or in surgical practice, who will not be able to bear testimony to the accuracy of Sydenham's observation on this subject:—"Quinimmo non pauci ex iis viris qui vitam degentes solitarum, chartis solent impallescere eodem morbo tentantur."

Hysterical affections, in which the symptoms are referred to the spine, are of very frequent occurrence. Such cases are, in many instances, mistaken for those of ulceration of the intervertebral cartilages and bodies of the vertebræ; and in consequence of this unfortunate im-



pression on the minds of the medical attendants, I have known not a few, but very numerous, instances of young ladies being condemned to the horizontal posture, and even to the torture of caustic issues and setons, for several successive years, in whom air and exercise, and cheerful occupations, would probably have produced a cure in the course of a few months.

In these cases the patient complains of pain and tenderness of the back, to which one or more of the following symptoms may be superadded, tending very much to mislead the medical or surgical attendant:—Pains in the limbs, especially in the lower limbs; a sense of constriction of the chest; involuntary spasms of the muscles, sometimes induced by change of position, at other times recurring without any very evident cause; a sense of weakness in the lower limbs, so that they are scarcely capable of supporting the weight of the body; and even actual paralysis; difficulty of voiding the urine. When the patient first complains of pain in the back, it must be acknowledged that there is some difficulty in forming a positive diagnosis; but the difficulty vanishes afterwards, so that none but a superficial observer can have any doubt as to the real nature of the disease. The pain in the back is seldom confined to a single spot, but it extends to different regions of the spine, and it not unfrequently shifts its place from one part to another. The tenderness of the spine is peculiar. The morbid sensibility is chiefly in the skin, and the patient, for the most part, flinches more when the skin is even slightly pinched, than when pressure is made on the vertebræ themselves. The pain is, in the majority of cases, more severe than in those of real vertebral disease; and the spasms of the muscles have a near resemblance to those of chorea. Where there is paralysis, or a tendency to paralysis, it is quite different from what is observed in cases of pressure on the spinal cord or brain; and I may take this opportunity of observing, with respect to hysterical paralysis generally, that it has this peculiarity: *it is not that the muscles are incapable of obeying the act of volition, but that the function of volition is not exercised.* The accuracy of this observation will, if I am not much mistaken, be acknowledged by all those who are at the pains of studying these cases with the attention which they so well deserve; and the importance of it in medical and surgical practice is sufficiently obvious. There are still other circumstances which may assist us in forming our judgment; such as the general aspect of the patient, and her condition in other respects; her time of life; the state of the menstruation; and especially the liability to the more common hysterical affection.

Patients with a weak pulse, and cold hands and feet, are, on the whole, more liable to suffer in this manner than other persons. But this is almost a needless repetition. It would be sufficient for me to refer to what I have already stated in speaking of hysterical affections simulating diseases of the joints of the extremities.

I have frequently known surgeons to apply a hot sponge to the spine, believing that if the patient complained of pain on the application, this was a proof of the existence of caries. My own expe-

rience leads me to believe that a patient who labours under a nervous pain of the back will complain of the hot sponge even more than one in whom real disease exists. I mention this trifling matter, that you may avoid being misled by it in your diagnosis.

What I have already described are only a part of the local hysterical affections which fall under the observation of the surgeon, and an acquaintance with which is necessary, to enable him to practice his art with credit to himself, and advantage to the public.

Hysterical retention of urine is of such frequent occurrence, that any particular description of it would seem to be superfluous. An observation, which has been already made, is equally applicable to this as to other forms of hysterical paralysis. The muscles are not incapable of obeying the act of volition, but the volition itself is not exercised. So it is, at least, in the first instance; but if the patient has allowed the bladder to remain for a great length of time in a state of extreme distention, actual paralysis may ensue, and she may then strive in vain to empty the bladder, without the aid of the catheter. In these, and in other cases in which the bladder has been long extremely distended, the mucous membrane becomes affected with chronic inflammation, secreting the usual adhesive mucus; and even worse consequences may ensue than these. In a case, to which I have had occasion to refer in my lectures on the Diseases of the Urinary Organs, hysterical retention of urine having been for a long time neglected, at last forty ounces of urine were drawn off by the catheter. In the *post-mortem* examination, the bladder was found of a very large size, of a dark and almost black colour: there were only slight vestiges of its natural structure left, the muscular fibres being very much wasted, and the internal membrane presenting the appearance of a very thin film, which was readily separated from the parts below. The dark colour of the bladder did not seem to arise from mortification, there being no fœtor, nor, with the exception of the black colour, any indication of it.

Females who labour under hysterical retention of urine, if left to themselves, usually recover in the course of a short space of time; sometimes almost suddenly; but if the catheter be employed, their recovery may be protracted for an indefinite period. We may lay it down as a general rule, that in these cases the catheter should not be had recourse to: and the only exceptions to it are in those extreme cases in which actual paralysis has taken place, and the bladder is likely to become diseased, if not artificially relieved.

Hysterical *aphonia*, or loss of voice, allowance being made for the different functions of the affected parts, corresponds very nearly to the hysterical retention of urine. It takes place suddenly, continues often for many months, even for one or two years; and then disappears as suddenly as it began. A patient thus affected may, when under the influence of strong moral excitement, find herself speaking in her natural voice, when, for some time before, she had spoken only in a whisper. Her recovery may be permanent, or she may relapse into her former condition. This symptom is not unfrequently met with in the male sex, especially in those of the clerical



profession, probably because they often lead very sedentary lives, and also because in their profession they are called upon to speak in public in a tone raised above the ordinary standard.

A tympanitic distention of the intestines is not an uncommon symptom in young women who are affected with hysteria; and, when existing to a great extent, is frequently mistaken for ovarian dropsy. The majority of cases in which the patient has been supposed to be cured of ovarian dropsy, by the agency of iodine and other remedies, have been, I doubt not, of this description. Yet the diagnosis is not difficult. The absence of fluid is distinguished by the absence of fluctuation; and the sound produced by percussion sufficiently indicates the cause of the distention. When the tumour is of a large size, there is pain in the abdomen, and the respiration is rendered difficult in consequence of the impediment which exists to the descent of the diaphragm. If the uneasiness be such as to induce the practitioner to direct the use of the warm bath, and the tympanitic distention be great, the effect is remarkable. Instead of sinking in the bath, as under ordinary circumstances, the patient floats in the water. If an elastic gum tube be cautiously introduced, so as to reach the upper part of the rectum, and pressure be made on the surface of the abdomen, the air may, in some instances, be made to escape through the tube, until the abdomen is reduced almost to its natural dimensions; but it becomes re-accumulated in the course of a few hours. A stimulating injection, made with the *confectio rutæ*, will sometimes produce the same result.

Young women are subject to an affection of the breast, corresponding to the hysterical affections of the joints, and indicated by very similar symptoms. These cases have been noticed by Sir A. Cooper, in his Observations on the Diseases of the Breast. The patient complains of pain in the breast, and shrinks on pressure being made with the fingers, or even on the skin being slightly pinched. Not unfrequently the examination of the part produces twitches and motions of the body, bearing no small resemblance to those of chorea; yet, if it can be dexterously managed, while the examination is being made, that the patient's attention should be otherwise engaged, not only these motions do not occur, but she may seem scarcely sensible of pain. The morbid sensibility is not confined to the breast, but extends to the axilla, and down the arm. No distinct tumour is perceptible in the breast, but when the disease has been of long continuance, the whole organ becomes slightly enlarged, probably in consequence of an increased determination of blood to the small vessels; yet there is no redness of the skin, and indeed the skin is even paler than natural, with a somewhat glossy appearance of its surface.

These cases are to be distinguished from those of a rare kind of irritable tumour of the breast, of which a representation is to be found among the plates annexed to Sir Astley Cooper's work. I conceive that they ought also to be distinguished from those which may occur at any time of life, and in women who have no particular disposition to hysteria. In the cases to which I now allude, the pain and tender-

ness are much less than in the true hysterical affection of the breast, and it will be almost invariably found that the patient has witnessed the miseries of some friend or acquaintance who has suffered from carcinoma. No part of the body will bear that rigid scrutiny to which the breast is subjected under these circumstances. Close attention will discover in any, even in the most healthy organ, sensations which had been previously overlooked; and constant anxiety on the subject may magnify such sensations into pain. In these last-mentioned cases a strong assurance that no disease exists will make the patient happy, and remove the pain; but no such assurance will be adequate to the cure of a genuine hysterical affection.

Hysterical tympanitis is always attended with a more or less constipated state of the bowels. But obstinate constipation of the bowels is a frequent occurrence in hysterical patients, independently of any considerable degree of tympanitis; and I have known many instances in which a case of this kind has been mistaken for one of stricture in the upper part of the rectum. The surgeon here sometimes misleads himself by taking it for granted that a very long bougie may be introduced into the rectum, if there be no actual contraction; not recollecting that the naturally tortuous course of the bowel is often sufficient to prevent a bougie being passed more than a few inches, even in a healthy rectum. But the statement of the patient tends to mislead him also; for she describes herself as going to the water-closet, and yet being unable to eject the contents of the bowels. I will not say that it is so in all cases, but I am satisfied that, in some instances, if you cross-examine the patient, you will find reason to believe that the hysterical constipation of the bowels is of the same nature with the hysterical retention of urine. The effort of volition is not exercised except when the accumulation of feces has become excessive. Hysterical difficulty of deglutition, which is sometimes mistaken for stricture of the œsophagus, is probably an affection of the same kind; there being no actual spasm, but a defective action of the voluntary muscles, by means of which deglutition is performed.

Symptoms resembling those of tetanus occasionally occur in patients who are under the influence of hysteria; sometimes assuming the form of trismus, at other times that of *opisthotonos*. A case of *locked jaw*, cured by the injection of oil of turpentine into the rectum, and published by Dr. Philips (then residing at Andover), in the sixth volume of the *Medico-Chirurgical Transactions*, is manifestly one of this description.

In a great number of instances, local hysterical symptoms appear to be connected with some accidental injury; generally a very slight one; and they are then especially liable to be misunderstood, and mistaken for something very different from what they really are.

For example: a woman is bled in the arm. She complains, perhaps, of severe pain at the time; but this subsides, and the wound heals, as under ordinary circumstances. Then she complains of pain again, extending down the forearm to the hand, up the arm to the axilla and shoulder, and even to the side of the neck, and sometimes down the side of the chest also: the extent and degree of pain vary-



ing in different cases. You examine the cicatrix, but can discover nothing unusual in it; but the patient flinches when it is touched. She very commonly complains of the surgeon, saying that she was badly bled, or bled with a blunt lancet, or a fowl lancet, or that a nerve was pricked which ought not to have been touched; while the real origin of her symptoms may be traced to the peculiar state of her own nervous system. If you investigate the case further, you will always find that she has been liable to various nervous symptoms previously to those which are attributed to her being bled; and when these last disappear, nervous symptoms of some other kind show themselves.

In another case, the patient has received a blow on the head. In order to avert the consequences which such an injury may be expected to produce, she is bled repeatedly, takes aperient medicines, and is kept on a low diet. When her physical powers are thus reduced, she complains of pain in the head even more than she did in the first instance: but the pain is of a different character, and is usually attended with other symptoms, such as do not belong to inflammation. Thus she has a sense of dizziness, or a feeling as if water was trickling over her head. Then the countenance is blanched, the skin is cool, and the pulse is probably small and quick, and weak. If under these circumstances, the surgeon, mistaking the nature of the case, continues to abstract blood, and to keep the patient on a low diet, all these symptoms become aggravated; other symptoms of a more decidedly hysterical character show themselves, and no improvement takes place until a more judicious treatment is adopted. In another case, which is of no unfrequent occurrence, a young woman pricks her finger, or perhaps the finger is merely pinched. Soon afterwards she complains of pain extending from the finger upwards, along the hand and forearm. This probably is followed by a convulsive action of the muscles of the arm, or by a continued contraction of the flexor muscles on the anterior part of the arm, so that the forearm is kept permanently bent; at least while the patient is awake, for the spasm is generally relaxed during sleep.

But the symptoms which, in hysterical patients, are attributed to a local injury, often proceed much further than what I have hitherto described. For example:

A young lady, eleven or twelve years of age, pricked the forefinger of her left hand with the point of a pair of scissors. This was immediately followed by pain in the course of the median nerve, and on the following day the forearm was fixed by muscular contraction at a right angle with the arm. After a few days, all the muscles of the hand and forearm were affected with violent spasms, producing strange convulsive movements of the hand and forearm. These were attended with sickness and vomiting, so that for two days whatever was received into the stomach was immediately rejected from it. By degrees the other limbs became affected in the same manner, and it was impossible for the patient to walk, or even to stand. Sometimes the diaphragm was affected so as almost to threaten suffocation. At other times the jaw was closed by a contraction of the

masseter muscle, or she lay in a state of opisthotonos. Occasionally there was a violent pain in the head, which was described as having the same character as that of the finger which had been pricked; and these symptoms continued (sometimes one order of them, sometimes another being predominant) until recovery took place under the circumstances which I shall have occasion to notice hereafter.

With a view to the further illustration of this part of the subject, I shall mention another case. A female, about thirty years of age, was admitted into St. George's Hospital, on account of a simple fracture of both bones of the forearm. There was nothing unusual in the fracture, but she complained of an extreme degree of pain in the injured part. By degrees the pain extended up the arm to the axilla; then to the same side of the neck and head. The smallest motion of the limb, even the lifting the forearm off the pillow on which it lay, occasioned violent pain and convulsive agitation of the limb, which were soon followed by what might be termed a state of hysterical syncope, in which the patient lay apparently insensible to external impressions for several minutes. The fracture united as under ordinary circumstances; but the nervous symptoms continued for many weeks, then subsiding gradually. It is worthy of notice (and this circumstance confirms the opinion, that symptoms of this kind belong more to the constitution than to the actual injury), that about two years before the occurrence of this last accident, this individual had met with a slight injury of the ankle, for which she was attended by Mr. Fuller, of Piccadilly; and that a train of nervous symptoms at that time supervened, nearly similar to those with which she was afterwards affected in the hospital. It is also worthy of notice, that on both occasions she had occasionally a spitting of blood, probably furnished by the mucous membrane of the pharynx or trachea, as there was no reason, either at the time or afterwards, to suspect the existence of disease in the lungs.

I have seen several cases of a singular affection of the hand and wrist, which manifestly belongs to the class of cases of which we are now treating. It occurs in females who have a disposition to hysteria, especially those who have suffered from mental anxiety and over-exertion, and is usually, but not constantly, referred to a sprain, or some other slight accident. The patient complains of pain in the back of the hand and wrist, trifling at first, but gradually becoming more severe. In many instances, after some time has elapsed, there is a diffused swelling of the soft parts, extending a short distance up the lower extremity of the forearm; and downwards as low as the fingers. This swelling is not attended with redness of the skin; and having lasted for a few weeks, it subsides, while the pain remains, constant in its character, aggravated by every motion of the limb, and always more severe in proportion as the patient's attention is in a greater degree directed to it. To prevent the motion, which she so much dreads, the patient keeps her hand in one position, and the consequence is that the joints become comparatively stiff, the hand at the same time having a very characteristic appearance, the skin being smooth and shining, and appearing to adhere more closely



than is usual to the parts beneath. This state of things may continue for three months, for six months, or even for one or two years; the symptoms then gradually subsiding, without leading to any further ill consequences. The result, however, is not always so fortunate. I attended a lady who laboured under the symptoms which I have just described, with the late Dr. Luke. She left London on a visit to the continent, without any amendment having taken place. I saw her again after the lapse of four or five years; the muscles of the forearm were at this time wasted and paralytic; the whole hand was shriveled and useless; the fingers permanently contracted towards the palm of the hand; the nails thin and scabrous.

I shall conclude the present lecture by a brief notice of some cases, which will serve to illustrate further the variety of singular local symptoms which may arise as a consequence of hysteria, and which may fall under your observation as practitioners in surgery.

I was consulted concerning a young lady, eighteen years of age, under the following circumstances. She was liable to fits of incessant sneezing, attended with a most abundant flow of watery fluid from the nostrils. This sometimes alternated with a nervous cough; while at other times she suffered from that sensation in the throat which is usually described under the name of *globus hystericus*. Not unfrequently she was affected with ordinary paroxysms of hysteria. She had a feeble circulation and cold hands and feet, and her menstruation was irregular and deficient; in other respects she was in good health. There was no evident disease in the nostrils.

A married lady, thirty-seven years of age, was affected with similar fits of sneezing, attended also with a copious watery discharge from the nostrils. These symptoms attacked her once in a week, and in each of these attacks she sneezed not less than one hundred times; the watery fluid dropping from the nostrils so as to wet a pocket-handkerchief completely through. About the same time she began to experience a disagreeable sensation in the face and palate, not amounting to pain, but which she described to be such as might be produced by a worm creeping in her flesh. These latter symptoms gradually became more distressing, while the fits of sneezing became less frequent. At the time of my being consulted, three years after the commencement of the disease, the fits of sneezing did not occur oftener than once in a month, but she complained of an aching pain, with a sense of pulsation in the roof of the mouth, the teeth, and tongue, occurring chiefly during the night, and being then very severe. There were no perceptible marks either of inflammation, or of other disease, in the parts to which the pain was referred.

An unmarried lady, thirty-two years of age, consulted me on account of her being liable to some very distressing paroxysms, in which she experienced a difficulty of respiration, attended with a sense of constriction of the chest, and great general excitement and agitation. These paroxysms often continued for ten or fifteen minutes, recurring at irregular intervals; sometimes without any evident cause; while at other times they might be traced to some sudden emotion of the mind. So far the case did not differ from many other

cases of hysteria; but the peculiarity of it, and the circumstance which led to my being consulted, were as follows:—There was a particular spot near the ensiform cartilage, which she believed to be in some way or another connected with her complaint. Nothing could be discovered in this part different from what is usual, by the most strict examination; but the pressure of the finger on it never failed to induce one of the paroxysms which I have just described. When these paroxysms were most severe, they were always attended with an abundant flow of limpid urine. These symptoms had existed in a greater or less degree for ten or twelve years, and had supervened on a state of exhaustion, occasioned by an attack of typhus fever.

A young married lady, who was liable to ordinary attacks of hysteria, complained of a tender spot on the anterior part of the abdomen, a little below the ensiform cartilage. The slightest pressure of the finger on it caused excessive pain, and was followed by violent agitation of the whole person, bearing a more near resemblance to the convulsive motions of *chorea* than to anything else, and continuing for several minutes.

---

## LECTURE XXIX.

### PATHOLOGY OF HYSTERIA.—TREATMENT OF LOCAL HYSTERICAL AFFECTIONS.

ALTHOUGH the examples of local hysterical affections which I have adduced in the two preceding lectures form only a part of those which you will meet with in practice, they are probably sufficient to answer the purpose of rendering you less liable than you would have been otherwise, to fall into the very common error of confounding cases of this description with those of real local disease. This is the principal object which I have had in view, in directing your attention to this subject; but it is one of much interest, and I am unwilling that you should leave it without proceeding somewhat further in the inquiries to which it leads. In the present lecture, then, I propose to offer some observations on the pathology of these cases, and on the treatment which should be employed for their relief.

Probably the following question has already presented itself to your minds. Is there any sufficient evidence that symptoms so various and dissimilar as some of those which have been described, depend on one and the same cause? Are there good grounds for the hypothesis that a pain in the knee in one case, retention of urine in a second, tympanitis in a third, are only different manifestations of one and the same disease, and that they are connected with the same state of system as that which gives rise to the common fits of hysteria? The same question may arise if you refer to Sydenham's observations on hysteria, in which he has endeavoured to point out



the symptoms which may mislead the medical, as I (following him *haud passibus æquis*) have now endeavoured to point out those which may mislead the surgical practitioner. To this it may be answered, that there is scarcely a single case, such as I have endeavoured to describe, in which, if you have the opportunity of studying its history and progress, you will not find abundant proof of the patient having suffered, in a greater or less degree, from the ordinary and acknowledged symptoms of hysteria; the two orders of symptoms sometimes existing simultaneously; at other times, and more frequently alternating with each other; and thus even a limited experience will enable you to satisfy your minds on the subject. But when you have attained an enlarged experience in your profession, you will find that it affords you evidence of another kind, though of such a nature that one individual cannot well communicate it to another, either in a lecture or writing. You will then find, that while no two of these cases are precisely and in all respects alike, it is by no means difficult to trace a series of cases leading from one to the other by an almost imperceptible gradation, and connecting with each other symptoms which, in the first instance, might be regarded as the most distant and heterogeneous.

Another question cannot fail to arise in the progress of these investigations. What is the real nature of the disease on which these various and anomalous symptoms depend? We cannot doubt that its locality is in the nervous system. This is sufficiently demonstrated by the character of the symptoms themselves. Dissection, which illuminates so many of the darkest regions of pathology, affords us little assistance here; at least we derive from it only negative information. I have, in several instances, examined the parts to which hysterical pains have been referred; and in one very aggravated case of the kind, I made a careful dissection of all the nerves by which they were supplied, but I have never been able to discover in them anything different from what belonged to their natural condition. But every part of the body has its corresponding point in the brain, and the greater number of them have their corresponding points in the spinal cord also. Does the examination of these organs lead to any more satisfactory result? The best proof that it does not do so is furnished by the following circumstance: although so many die of other diseases, who have suffered from hysteria also, and the opportunities of examining the bodies of hysterical patients after death are therefore sufficiently numerous, yet the works of the best morbid anatomists contain no observations whatever on the subject. I have had the opportunity of instituting *post-mortem* examinations in three cases, in which the hysterical affections were of so aggravated a kind as to be, directly or indirectly, the cause of death; and you shall know the result. In one of them, the patient laboured under a very severe hysterical pain in the side, and was liable, among various other hysterical symptoms, to fits, in which she was scarcely conscious of her own actions. It must have been in one of these attacks that a great number of needles were introduced into one of her legs, which afterwards occasioned much inflammation and effu-

sion of serum into the cellular texture. The patient died, and the body was most carefully examined, but no morbid appearance of any kind could be discovered in it, except what belonged to the œdematous state of the leg. Another case is one to which I have referred already, in which, the patient having long laboured under an hysterical retention of urine, the bladder was found enormously distended, of a black colour, the mucous membrane and muscular tunic being at the same time much attenuated. This patient was an unmarried female, twenty-nine years of age. Having been previously indisposed for a considerable time, she was supposed to have sprained her wrist in lifting a heavy saucepan. From this time she was never free from pain, in the situation of the outer part of the lower extremity of the radius. The pain extended up the forearm, and downwards on the side. In November, 1814, about a month after the occurrence of the accident, she was admitted into the hospital. At this time the most careful examination could detect no alteration in the appearance of the limb, but she complained of a constant and intense pain, which extended from the supposed seat of the injury downwards to the fingers, upwards to the shoulder, and again downwards to the spine and sternum. She had great oppression and difficulty of respiration, occasional twitches of the muscles of the face, and any sudden motion of the hand aggravated all these symptoms, and then threw her into a state approaching to that of syncope; in which she was almost unconscious of all that happened, lying with her eyes wide open, and at last recovering with an hysterical sobbing. Her pulse was feeble, beating 120 times in a minute. Forty ounces of urine were drawn off from the bladder, but without any relief as to the other symptoms. The tongue became black and dry; the pulse more feeble; the belly tympanitic; the alvine evacuations being of a dark colour. Then there were hiccough and vomiting; she became weaker and weaker, and died after the lapse of fourteen days from the time of her admission into the hospital. After death, the brain and the thoracic and abdominal viscera were very carefully examined, but no morbid appearances were discovered in any one of them, with the exception of the peculiar condition of the bladder, which was described formerly, and two ulcers of the mucous membrane of the *ileum*, each not more than half an inch in length, but occupying almost the entire circumference of the intestine.

The female who was the subject of the third case had laboured under a paralytic affection of the lower limbs, (*paraplegia*), which Dr. Seymour believed, with good reason, to be connected with, and the consequence of, hysteria. A practitioner whom she consulted, however, thought it advisable to have recourse to repeated blood-letting and other methods of depletion. The result was, the formation of extensive sloughs of the nates and of the soft parts covering the ankles. The patient was now admitted into the hospital, in a state of great exhaustion, and soon afterwards died. The brain and spinal cord were most carefully examined, in the presence of many of you who are now present, but it could not be discovered that they



differed, in the smallest degree, from their natural condition; nor were there any signs of disease in the thoracic or abdominal viscera.

In adducing these facts, however, I by no means intend to assert that the organization of the nervous system, in a person who is liable to aggravated hysterical affections, differs in no respect from that of another. The intimate structure of the brain, spinal cord, and nerves, is on too minute a scale for our senses to be able to perceive and comprehend it, and of course there may be differences in the organization of these organs which our senses are incapable of detecting also. There is, it is true, nothing in the history of hysteria to justify the opinion that it is connected with any morbid growth, or morbid change of structure, such as we find to exist in what are usually termed organic diseases; but it is easy to suppose, without reference to organic disease, that the construction of the nervous system, at the period when growth is concluded, may not be the same in all individuals, and that an imperfect development of it may lay the foundation of all the aggravated hysterical affections. It seems to me that this hypothesis affords a reasonable explanation of the phenomena which those strange diseases present to our observation, and that it is not easy to explain them in any other manner. This being admitted, the connection of hysteria with the habits of early life, while growth is going on, becomes no mystery. We can understand, also, wherefore it is that the disposition is often, to a certain degree, hereditary; that it prevails in particular families, and that having been once established in the system, it is never totally eradicated. Nor is this opinion in any way contradicted by the circumstance of hysterical symptoms alternating with longer or shorter intervals of perfect health. It is the same with many other nervous diseases, some of which are much more formidable than these. The lunatic has intervals in which his delusions vanish. A tumour pressing on the brain may occasion epilepsy: the cause exists always, but after the patient has had one fit, weeks or months may elapse before he has another. In like manner a patient may have a nervous system so constructed as to render her liable to attacks of hysteria. While she is strong and healthy in other respects, no hysterical symptoms arise: but if she be weakened by an attack of fever, by loss of blood, by too great exertion of mind and body, or depressed by anxiety, grief, or disappointment, the disease is rendered manifest, and it assumes one form or another, accordingly as accident directs its influence to one or another part of the system.

This view of the origin and nature of hysterical affections derives some confirmation from a circumstance which I have had frequent occasion to observe; although it has not, so far as I know, been noticed by pathological writers. In those who are much disposed to them, there are an evident weakness and laxity of the tissues, independently of what may be supposed to belong to the tissues of the nervous system. Thus there is a peculiar looseness of the joints; sometimes existing to such an extent that they are liable to a kind of subluxation (a slipping in and out, as the patient terms it), without any laceration of the synovial membrane or ligaments. I have

known several cases in which a patient, on making some sudden exertion, has experienced a sensation as if some muscular or ligamentous fibres had given way; and, in some instances, a severe nervous pain, referred to this and the neighbouring parts, has remained for a long time afterwards. It is not unusual for the smaller blood-vessels to burst, so as to occasion slight hemorrhage; although there is no actual disease in the bleeding part. This occurs most frequently with respect to the vessels of the mucous membranes. The disposition to hemorrhage, however, is not peculiar to these textures. In a patient concerning whom I was consulted with Mr. Mawdsley, there had been repeated hemorrhages from the ears.

These things must be regarded as indications of want of physical power in the system, and such is the prevailing character of hysterical disease; most distinctly marked, of course, in the most aggravated cases of the kind. A large proportion of hysterical patients suffer from cold hands and feet, have a feeble contracted pulse, a small appetite for food, and are wearied by very small exertions; they are more liable than other persons to lateral curvature of the spine. In some instances, and more especially in the parts which are most exposed to the external temperature, or at the greatest distance from the vital organs, the point of the nose, for example, and the ankles, the circulation is so weak that they assume at times a purple appearance, followed by vesications, and even by a thin slough. These last-mentioned symptoms are, in themselves, a proof of an insufficient generation of nervous energy; they correspond to what is observed after severe injuries of the spinal cord, as well as to what occurred in the following cases, as the consequence of an injury of a nerve. A young man met with an accident, in which the ulnar nerve was divided behind the inner condyle of the arm. The wound healed readily; but when I was consulted, about three months afterwards, the little finger was cold and deprived of sensation, with purple spots upon it, similar to those which precede the formation of vesication. A girl was admitted some years ago into the hospital after a similar accident. The little finger was cold and benumbed, and occasionally the whole of the integuments covering, it assumed a dark purple colour; this was always followed by a broad vesication; then by a superficial sore, which, however, healed by the formation of a new cuticle; and this process was repeated several times while the girl remained in the hospital.

In some instances the disposition to hysteria manifestly depends on an original mal-construction of the nervous system, which probably has been transmitted from the parent to the child; in others it is equally manifest that it is the result of injudicious management in the early part of life. In the latter order of cases, the ill consequences which would otherwise ensue, may be altogether averted by the timely adoption of a better system of education; and in the former, much may be done in the interval between the period of infancy and that of growth being completed, to improve the condition



of the individual, and to render her situation in after life less distressing than it would be otherwise.

You can render no more essential service to the more affluent classes of society, than by availing yourselves of every opportunity of explaining to those among them who are parents, how much the ordinary system of education tends to engender the disposition to these diseases among their female children. If you would go further, so as to make them understand in what their error consists; what they ought to do, and what they ought to leave undone, you need only point out the difference between the plans usually pursued in the bringing up of the two sexes. The boys are sent at an early age to school, where a large portion of their time is passed in taking exercise in the open air; while their sisters are confined to heated rooms, taking little exercise out of doors, and often none at all except in a carriage. Then, for the most part, the latter spend much more of their time in actual study than the former. The mind is over-educated at the expense of the physical structure, and, after all, with little advantage to the mind itself; for who can doubt that the principal object of this part of education ought to be, not so much to fill the mind with knowledge, as to train it to a right exercise of its intellectual and moral faculties, or that, other things being the same, this is more easily accomplished in those whose animal functions are preserved in a healthy state, than it is in others?

But these observations relate only to measures of prevention; whereas, in practice, you will have to deal with cases in which the hysterical construction of the nervous system already exists.

The medical treatment of hysteria is in the department of the physician: and as this subject is treated of at length in the lectures on the practice of medicine, I shall only offer a few observations as to the principles in which it should be conducted.

In those in whom the liability to hysterical diseases exists, as I have already had occasion to observe, the symptoms of hysteria are not always present, and much may be done by art towards rendering their occurrence less frequent, and their character less severe, than would be the case otherwise. These symptoms are especially called into existence whenever, from any cause, the bodily powers are reduced below the ordinary standard; and it is reasonable to suppose that an opposite effect will be produced by whatever tends to elevate these powers, and maintain the general health. The whole class of tonic remedies, especially steel, quinine, sulphate of zinc, and ammonia may, under certain circumstances, be employed with advantage. So also, it is of importance that the patient should live on a generous diet; that she should take exercise out of doors; that she should live in the pure air of the country rather than in that of a crowded city; and that her mind should be agreeably occupied, without being exhausted by great exertions. Nothing tends more to aggravate the disposition to hysteria than the tedium and *ennui* of a life without occupation; when the mind is, as it were, thrown back upon itself, brooding over imaginary misfortunes, and creating for itself objects of anxiety.

The use of what are usually called antispasmodic remedies, especially valerian and assafetida, is indicated, not where there is merely a liability to hysterical symptoms, but where these symptoms are actually present. Those tonics which are useful in preventing these symptoms, are useful in the removal of them also, especially where the disease assumes a chronic form, as it generally does in the cases which fall under the observation of the surgeon. Here, also, I have, in several instances, known much advantage to arise from a long-continued course of sulphate of copper administered in pills, in small doses. Nor must we overlook another important rule of practice. There is often some particular circumstance in the state of the system at the time, which operates as the immediate exciting cause of the hysterical symptoms, and which medicine may remove. For example, in one individual there may be a furred tongue, and a costive state of the bowels; in another, deficient menstruation; and purgatives and emmenagogues may be administered with advantage, either separately or in combination. Again, it is not unusual in aggravated cases of hysteria to find the urine depositing a large quantity of lithic acid, in the form of sand; or the urine may be voided high-coloured, depositing a pink amorphous sediment, abounding in the lithate of ammonia; and in either of these cases the exhibition of alkalis, combined with alterative doses of mercury, purgatives and a regulated diet, will contribute to produce a cure, the unhealthy quality of the urine seeming to be the cause, rather than the effect of the hysterical affection.

On all these points I refer you to the instructions which you will receive from some of your other teachers; but there are some questions connected with the surgical treatment of local hysterical affections, into the consideration of which I shall feel it my duty to enter more fully; although, in so doing, the advice which I shall have to give you will be, for the most part, of a negative kind, relating not so much to what you ought to do, as to what you ought to leave undone.

Hysterical pains are sometimes relieved by friction with a stimulating liniment; such, for example, as the compound camphor liniment, which may also be used in combination with the tincture of opium. The application of the belladonna plaster is occasionally useful, although it certainly does not produce those remarkable effects which not unfrequently follow its use in other cases of neuralgia.

Hysterical pains are sometimes palliated by bathing the affected part with the following lotion, applied tepid: R.—Misturæ camphoræ ℥iiss; spiritus rosmarini ℥iiss.—M. Fiat lotio.

In some instances the patients derive advantage from the exposure of the part to the vapour of hot water. This is especially useful in the cases of that peculiar affection of the wrist and hand which I described in the last lecture.

In those cases in which the limb to which the symptoms are referred is affected alternately with heat and cold, I have known the following plan of treatment to be attended with excellent effects. During what may be termed the hot fit, let a compress be applied,



wet with a cold spirituous lotion; and when the heat has subsided, and the limb has become cold, let a thick woollen stocking be drawn over it, and then an oiled silk covering over the worsted stocking, so as to confine the heat and perspiration. When the cold fit has subsided, the oiled silk covering may be removed. This local treatment, however, should be combined with the exhibition of the sulphate of quinine, the use of which seems to be especially indicated by the intermitting character of the symptoms.

In some cases of hysterical neuralgia the patient is supposed to derive benefit from the abstraction of blood by leeches, or cupping, or even by venesection. Indeed, I have no doubt that the loss of blood is occasionally followed by a real alleviation of pain. But the relief is never otherwise than temporary; and wherever I have known this kind of treatment to be frequently resorted to, the ultimate result has been, certainly, not only not beneficial, but absolutely injurious to the patient. In fact, we may lay it down as a general rule, that whatever lessens the physical powers tends to prolong the duration of hysterical diseases of all kinds; and nothing produces this effect in a more marked manner than repeated blood-letting. Those who are subjected to this treatment, according to my experience, become almost invariably invalids for life; and I have no doubt that not unfrequently their lives are materially shortened by it.

Blisters, issues, and the whole class of counter-irritants, in the majority of cases increase the patient's sufferings; and there is one objection that may be urged against all local remedies, which applies especially to these, namely, that they prevent the attention being abstracted from the local symptoms. I may take this opportunity of observing, that nothing is more essential to the patient's recovery than that her mind should not be constantly occupied with the subject of her ailments. The treatment employed should be such as will involve as little as possible deviation from the ordinary habits of life. Thus in a case of hysterical neuralgia of the knee or hip, it seldom happens that any real amendment takes place while the patient remains confined as an invalid to her sofa. The pain may abate, but a sense of weakness follows, which disables her from walking more than the pain itself, and which, for obvious reasons, goes on increasing in proportion as the confinement is of longer duration. The first step towards a cure is, that she should have sufficient strength of mind to begin to use the limb in spite of present suffering.

Another question connected with surgical practice remains to be considered. In hysterical diseases affecting the extremities, will any advantage arise from the division of the nerves which supply the affected part, so as to destroy the communication between it and the sensorium? or from the entire removal of the part itself, by excision or amputation? If the view which I have been led to take of these affections, namely, that they belong to the nervous system generally, and not to the part to which the symptoms are referred, has any foundation in reality, it cannot be expected that such operations will lead to any good result: and the notorious failure of similar operations, when performed in cases of *tic douloureux* of the face, and

*tetanus*, undoubtedly tends to confirm this opinion as to their utter inutility. Pathological science, however, is not so far advanced as to authorize us in any instance to disregard the lessons of experience; and it is well, before we arrive at a positive conclusion on the subject, that we should refer to this higher source of instruction.

In a case which I have already mentioned, of a young lady who had a train of most severe hysterical symptoms following the accidental prick of her finger, I was induced (many years ago) to divide the digital nerves. This was effected by a circular incision, carefully performed, extending through the whole of the nerves, integuments, vessels, and cellular texture, to the bones laterally, and to the aponeuroses of the tendons, anteriorly and posteriorly. The result was, that the patient's sufferings were aggravated rather than relieved.

As long ago as the year 1818, I was requested to visit a lady in the country on account of a disease of the knee. I was led to believe that she had laboured under an inflammation of the synovial membrane, which had in a great degree subsided, but that the harder textures had suffered in consequence, and that the cartilages were in danger of being ulcerated, and I recommended a plan of treatment accordingly: Whether, with my present experience on the subject, I should have taken the same view of her case, I will not undertake to say, but the result was, that a material improvement took place in the first instance. After some time, however, there was a manifest aggravation of all her symptoms. She suffered more than ever; so that she became anxious to undergo the amputation of the limb. I was now again consulted respecting her, but from the written accounts which I received, I concluded, that the pain did not indicate the existence of any serious disease, and that the circumstances of the case did not justify so violent a measure as had been proposed. However, her wishes remained unaltered, and two surgeons of eminence in the country yielding to her entreaties, performed the operation. On dissection of the amputated joint, they were surprised to find that there was no collection of matter in its cavity; that the cartilages had disappeared in one spot, of very limited extent; and that there was no other mischief. The stump healed readily enough, but she obtained no relief. I had the opportunity of seeing her some months after the operation, suffering more than ever, with intense pain in the stump, and violent convulsive action of the muscles which move the thigh bone on the pelvis.

Mr. Soden, of Bath, informed me of another of these cases, which fell under his observation, in which also the limb was amputated above the knee, but with no better result than in the case last mentioned. The symptoms attacked the stump, and the patient suffered as much after the operation as she had done before.

The history of a third case of the same kind has been published by Mr. Mayo, in his *Outlines of Pathology*. The knee was amputated, and the stump healed. Soon after the stump was accidentally struck, and this slight accident was followed by pain in the part exactly similar to that which had been referred formerly to the knee. Amputation was then performed a second time; but as the wound



healed, the pain recurred, being again referred to the stump. Mr. Mayo then divided the sciatic nerve, below the edge of the *glutæus maximus* muscle. At first the pain was supposed to have been relieved, as after the former operations; but it returned on the wound being healed. At this period I had the opportunity of seeing the patient, the pain which she endured being as severe as ever. In short, she had undergone these various operations, without having derived the smallest advantage from any one of them.

It must be acknowledged that these, and other similar cases which might be enumerated, seem to be quite conclusive against all attempts to relieve these hysterical affections by an operation. Some evidence, however, may be, and has been, adduced on the other side of the question.

A young woman was bled in the arm, in July, 1820. The wound healed as usual, but on the 7th of August she was admitted into St. George's Hospital, labouring under hysterical pain, referred chiefly to the cicatrix, but extending also downwards to the hand, upwards to the axilla, and again downwards on the side to the leg and foot, the latter being at the same time in a great degree benumbed. The whole of the arm was cold, and of a purple colour, and the skin was exquisitely sensible when pinched. On the 25th of August I excised the cicatrix. She was supposed to be immediately relieved; and when the wound made in the operation was healed, she left the hospital as cured. So far, then, it appeared as if the operation had been successful. But observe what happened afterwards. At the expiration of two months, she was re-admitted, not on account of a recurrence of the pain in the arm, but with other symptoms depending on the same state of the general system. The nose was cold, and of a purple colour, and there was a similar condition of the integuments of the ankle. On the latter there was a broad vesication; and both of these parts seemed as if on the point of becoming gangrenous. This result, however, did not take place, and I lost sight of the patient some time afterwards.

In Mr. Mayo's patient,\* whose case I have already mentioned, we are informed that he afterwards was induced to perform a further operation; removing the head of the thigh-bone from the acetabulum: and I have a letter from Mr. Mayo, in which he states that this last measure has been followed by a relief from pain up to the present time. We are also informed that Sir Astley Cooper† amputated the arm at the shoulder joint, on account of a neuralgic affection of a stump, and that the patient was permanently cured; and that a similar operation was performed successfully by Mr. Bransby Cooper. However, until we know more of these cases than is now recorded, it is impossible for us to determine whether they did or did not belong to the class of hysterical affections. Even if they did, the question still remains: how long did the patients remain under the observation of the surgeons afterwards? and was a cure really obtained, or was there simply a commutation of one hysterical affection for another?

\* Medical Gazette, May 7, 1836.

† Op. cit.

In estimating the value, not only of such operations, but of various other modes of treatment which have been supposed at one time or another to be useful in cases of aggravated hysteria, we are never to lose sight of the following circumstances:—1. *Hysterical symptoms frequently disappear at once, without any manifest cause for their disappearance.* Examples of this fact may be found among the cases to which I have had occasion to refer in the preceding lectures. A young lady who had been for more than two years confined to the recumbent posture on account of an hysterical affection simulating disease of the hip-joint, recovered suddenly one night while in the act of turning in bed. Another young lady in whom a long train of most severe hysterical symptoms followed an accidental prick of one of her fingers, after the disease had existed for a great length of time (if I am not much mistaken, for more than two years), recovered also. 2. *It still more frequently happens that recovery from hysterical symptoms immediately follows a forcible impression of any kind made on the nervous system.* Hence it is that anything may obtain the credit of having effected a cure in these cases. Moral and physical agents are alike in this respect. Sometimes one remedy may appear to be successful, sometimes another: and that which is supposed to be productive of the greatest benefit in one case, may never be useful afterwards.

I have already mentioned the case of a young lady who, having long laboured under an hysterical neuralgia of the hip and thigh, rendering her unable to stand, or even to walk, immediately lost all her symptoms on being thrown from a donkey which she was riding: and the following are only a few among many other cases, which might be adduced in confirmation of what has been just stated.

In the eighth volume of the Transactions of the Royal Medical and Chirurgical Society, Mr. Pearson has described the case of a lady who laboured under a nervous affection of the hand and forearm, showing itself in the form of severe pain and spasms of the muscles, and she immediately recovered on the application of a stimulating liniment, which, containing oil of turpentine, produced a vesicular eruption over the whole person.

I was informed, on good authority, of the case of a young lady who had long laboured under a severe hysterical affection, attended with spasmodic contraction of the muscles of one of the lower limbs, and which symptoms left her suddenly, on the extraction of a molar tooth.

Many years ago, I attended a young lady on account of a painful affection of the instep, which I certainly did not understand at the time, but of which, with my present experience on these subjects, I am satisfied that it was hysterical neuralgia, and nothing else. She was attended by other surgeons afterwards, who, I believe, were as much perplexed as I was, as to the nature of the disease, and who, at all events, gave her no relief. At last, while suffering as much as ever, she was informed of some remarkable cures obtained by the use of the vapour bath and champooing, and she immediately went to Brighton, that she might make a trial of these remedies. The



first champoning gave her great relief; the second completed the cure. I was consulted respecting her afterwards, labouring under a nervous affection of the arm and forearm.

In the "Christian Observer" for November, 1830, we find recorded the case of Miss Fancourt who had long been unable to move in consequence of what was evidently an hysterical affection, simulating disease of the hip-joint, and was supposed to have been miraculously cured under the influence of the prayers of her spiritual adviser leaving her couch at once, and walking down stairs to supper, to the astonishment of her family.

We need not pursue this part of our inquiries further. To you who will soon be engaged in the practice of your profession, what I have now stated will be sufficient to impress your minds with a proper degree of skepticism, and to prevent you being misled by the caprices of these strange disorders. With respect to the great majority of society, whose minds are not accustomed to these investigations, and who do not know the difficulty of obtaining exact evidence as to the operation even of the remedies in common use, I feel that it will be almost a waste of time to endeavour to enlighten their minds on the subject. They will always be disposed to listen to, and to believe, the histories of the marvelous cures of hysterical affections; and with them conjurors of all kinds, from Prince Hohenlohe and the professors of animal magnetism, down to the most vulgar impostors, will always be the successful rivals of those practitioners who have studied their profession as a science.

Before I quit the subject, I shall trouble you with one further piece of advice. I have told you that it is most important that you should not mistake cases of nervous affection for those of real local disease. It is equally important that you should not mistake the latter for the former; whenever you are in doubt, be careful that you do not employ any kind of treatment which would be injurious, if local disease existed. A short delay will always enable you to understand the exact nature of the case, so that you can no longer hesitate as to the remedies which are required for its relief.

---

## LECTURE XXX.

### ON DISEASES OF THE HIP-JOINT.

THERE are several cases at present in the hospital of diseased joints, and among these some of disease of the hip; and I do not know that I can offer any subject to your consideration better than this. It is one of great interest, and it is very important that you should understand it as far as the actual state of our knowledge will enable you to do so.

I remember the time when the question on looking at one of these patients, would have been, whether there were or were not a diseased hip, and the surgeon decided, according to the best of his ability, in the negative or in the affirmative. It was just a case of diseased hip, or it was not, and there was no further attempt at diagnosis. But you know that the hip-joint is composed of a great variety of textures, and that disease of it must arise from various causes. It would be very remarkable if the hip-joint differed from all the other organs of the body, and was subject to only one kind of malady. You cannot for an instant hesitate to believe that there must be a variety of diseases of the hip, the difference between them depending partly on the organization of the part in which the disease began, partly on the patient's constitution, and on the external causes by which that constitution has been influenced.

In my treatise on the "Diseases of the Joints," I have given an elaborate history of the diseases to which this and other joints are liable, and I have detailed many cases and described many dissections, from which I thought I was justified in deducing that history. But in the present lecture I do not propose to pursue the course which I have followed in my treatise. My observations will be confined to the hip-joint only. I shall probably refer to other joints sometimes, but it will be only with the view of illustrating what happens in the hip. It will be my object to bring before you at once the different diseases to which the hip is liable, and the symptoms by which they are to be distinguished in the living body. Perhaps by pursuing this course I shall make the subject more easily comprehended by you than it would be if you were simply to read my treatise. At any rate this mode of proceeding will enable you to understand the observations which I published, when you read them, better than you would understand them otherwise.

#### INFLAMMATION OF THE SYNOVIAL MEMBRANE.

There is no disease of the joints more common than inflammation of the synovial membrane. The hip is liable to this disease, but it must be acknowledged that it is not liable to it in the same degree with some of the other articulations. You will understand how this may be explained when I tell you that inflammation of the synovial membrane, in a large proportion of cases, may be traced to exposure to damp and cold, and vicissitudes of temperature. The hip is warmly clothed by numerous muscles; an immense mass of flesh lies over it; and thus it is protected from one of the causes which produces inflammation of the synovial membrane, much more than the knee, the wrist, the ankle, and the other joints that are superficially situated.

I conceive that the proper course for you to pursue, if you would study the pathology of any part of the body, is this: be not satisfied with examining the morbid appearances in the last stage of the disease, when all the parts are confounded, as it were, together in one dis-



eased mass—when the disease has extended from the structure primarily affected to the other parts—and when you cannot, therefore, say where it originated, and what it was in the beginning. Be on the look out for the opportunities which must occasionally occur of examining the morbid appearances, where the patient has died from some accidental cause in an early stage of his complaint; this, I say, is the way in which the pathology of any part of the body (that is, so far as morbid anatomy is concerned) should be studied; and it was in this way that I have always endeavoured to study the diseases of the joints.

I have had very scanty opportunities of examining the morbid appearances presented by inflammation of the synovial membrane of the hip in its earliest stages; but this deficiency has been compensated by the abundant opportunities which I have had of examining the same thing in other articulations, so that I have no doubt that I can tell you very accurately what the morbid appearances would be in the hip if you could see them.

In slight cases, then, of inflammation of the synovial membrane, you find a few more vessels than usual injected with red blood ramifying over the inner surface of the membrane, and the joint contains a larger quantity of synovia than under ordinary circumstances. The synovia, in the cases to which I now refer, does not differ from healthy synovia in any of its sensible qualities. But when inflammation of the synovial membrane runs high, you will find great increased vascularity of the whole of its texture; the red vessels being as numerous as those of the conjunctiva of the eye in a severe ophthalmia; and now the joint contains fluid of another character; not synovia, but a turbid serum. Not unfrequently there are small shreds of coagulated lymph floating in the serum, or broad flakes of lymph lining the synovial membrane in different parts. In protracted cases the synovial membrane is thickened, and you will see in this preparation a sort of pendulous process, projecting from it into the articular cavity, like what is called chemosis in the eyelid.

In a more advanced stage of the disease, the morbid appearances are not confined to the synovial membrane; the cartilage is found to be thinner in certain places, or totally destroyed by ulceration. In this drawing [presenting it] you see the incipient process of this ulceration; and in these others it is in its more advanced stages. As the cartilage becomes completely absorbed, so a carious surface of the bone beneath is necessarily exposed.

I have said that inflammation of the synovial membrane terminates in effusion of lymph and serum, but it sometimes terminates in suppuration; the surface of the synovial membrane secreting pus in the same way as pus is secreted by the surface of a mucous, and occasionally of a serous, membrane. The joint, when under these circumstances, becomes one large abscess, and if a free artificial opening be not made at an early period, the matter makes its way out by ulceration, through the synovial membrane and ligaments, burrowing among the muscles in the neighbourhood, and forming sinuses. In these cases of suppurative inflammation the cartilage in the first

instance is unaffected, but that in contact with the pus soon begins to ulcerate, and the ulceration of the cartilage, of course, is followed by ulceration or caries of the bones. Here the suppuration is the immediate result of the inflammation of the synovial membrane, and the ulceration of the cartilage and bones is altogether secondary. But then there are other cases where the cartilage begins to ulcerate without pus having been secreted by the synovial membrane, and in which suppuration at last takes place, being not the cause but the consequence of ulceration of the harder textures.

Such is a brief history of the pathological changes produced by inflammation of the synovial membrane in joints generally, and of course in the hip-joint among the rest. I shall next speak to you more particularly of the symptoms of the disease as it affects the hip.

In the first place, then, inflammation of the synovial membrane of the hip is a disease that comes on suddenly, and in the course of two, three, or four days it is commonly at its height. You must remember this circumstance, and contrast it with what I shall tell you afterwards of the early symptoms of other diseases of the hip. Then, in the course of a few days more, under proper treatment, the pain becomes less severe: and now observe the kind and character of the pain. The patient complains of every attempt to move the limb. The hip-joint feels as if it were stiff, and the pain is referred, not so much to the hip itself, as it is to the inside of the thigh and groin; nearly to the same parts as in cases of fracture of the neck of the femur. There is not at this period a wasting, and sometimes there is even a perceptible fullness of the nates. If you press on the condyles of the femur, and squeeze the head of the bone into the socket of the acetabulum, the patient does not complain; nor does he complain if you press on the great trochanter; but if you take the limb and move it backwards and forwards, or if you take hold of the knee and pull it as if you were trying to pull the head of the thigh-bone out of the acetabulum, then pain is felt.

You have heard of dislocation of the hip-joint from disease, and I shall explain to you one kind of dislocation from this cause hereafter. I shall speak at present of dislocation from disease only as it occurs in cases of inflammation of the synovial membrane. I have seen several instances in which dislocation took place under these circumstances, and I conclude that the following is the proper explanation of it:—The cartilage begins to ulcerate and generally at that part at which the ligaments are inserted. The ulceration extends to one extremity of the round ligament. The acetabulum is filled with lymph and synovia, and the capsular ligament is thereby much distended. There is then, of course, a force operating, which tends to push the head of the bone out of the socket in which it is contained. The round ligament gives way partly from being overstrained, and partly from ulceration, and there is nothing to hinder the head of the bone from being drawn up on the dorsum of the ilium. In the particular cases to which I now allude, according to my experience the dislocation is always upwards and outwards, and we see this indicated by the usual signs. The thigh is bent forwards, the toes



are turned inward, and the head of the bone may be distinguished lying on the dorsum of the ilium. Before such a dislocation can be effected, the capsular ligament must have been kept for a longer or shorter time in a state of excessive tension; and it will not be difficult for you to understand how much the patient must have suffered in consequence. You know what suffering there is in inflammation and effusion under any unyielding texture; under a fascia, for example, or even under the thick hard cuticle of the thumb or foot. The patient suffers more from tension when the hip-joint is distended with synovia, or serum, or pus, than when the same thing happens to any of the other articulations. And for this plain reason: the capsular ligament surrounds the synovial membrane everywhere in the hip-joint, which is not the case in most others. In the knee, for instance, when the synovial membrane is distended, the fluid covered by the membrane usually slides up on the fore part of the thigh, under the muscles. Not only great local suffering, but great constitutional disturbance, is usually the consequence of this distended state of the capsule of the hip; severe fever, attended in some instances with a determination of blood to the head, and delirium. I have known such a case as I am about to mention occur two or three times. A girl was seized with an attack of what was supposed at first to be rheumatic fever. In the course of two or three days the fever was excessive. She lay in a state of delirium for several days, and she seemed, as it were, to supersede the local symptoms which existed in the first instance. She nearly died, but by and by things took a favourable turn, and she recovered. After her recovery her friends looked to the limb, and to their surprise found it very much distorted. Mr. Earle and myself saw the girl under these circumstances, and we found that the head of the bone was lodged on the dorsum of the ilium. In some cases of this kind when the head of the thigh-bone is pushed out of the socket of the acetabulum, the serous fluid which has been collected within the cavity of the capsular ligament makes its way through an ulcerated opening of it into the cellular membrane external to the joint, forming a tumour under the glutæi muscles. This tumour evidently fluctuates, and you might suppose it to be an abscess, but take care not to arrive too hastily at this conclusion. It may, it is true, be a collection of pus which cannot be absorbed; but it may, on the other hand, be a collection of serum and lymph, which may be absorbed. The grooved exploring needle (which you see so frequently used with advantage in this hospital), may be usefully employed in this case. Puncture the tumour with it. A little of the fluid will probably escape along the groove, and if you find that it is really purulent, you may then introduce a lancet and make a free opening; but if it be serum, you will take care to go no farther. It is doubtful whether pus is ever absorbed. If this ever happens, it certainly is a rare occurrence; but an effusion of serum becomes absorbed ultimately. If you find the fluid to be serous, you have nothing to do but to leave the patient quiet, and wait for the time when absorption will have taken place. If you open a cavity containing serous fluid with a lancet, in all probability you induce

suppuration, and thus make an abscess where there was no abscess before.

Such, then, are the principal circumstances respecting the pathology and the symptoms of inflammation of the synovial membrane of the hip; I shall speak of the treatment in another lecture. But before we go farther I should like to call your attention to a preparation which is now on the table, taken from a patient who died lately in this hospital. I think it not improbable, though we do not know enough of the history of the case to speak with certainty—for we did not see the disease till it was far advanced—that here the original disease was inflammation of the synovial membrane. The cartilage is extensively ulcerated, the synovial membrane is rather (not a great deal) thickened, but the circumstance which leads me to suspect that the original disease may have been inflammation of the synovial membrane, is this, that the joint was filled with a number of small granular bodies, composed of coagulated lymph, and I know that in other cases these bodies are the result of inflammation of the synovial membrane. You find them sometimes in joints, but more frequently in the synovial membranes which constitute the bursæ, and sheathe the tendons. These granular bodies, after a considerable time, assume an appearance like that of small melon seeds, becoming flat and smooth, and of an oval figure. The joint in this instance contained a great quantity of these bodies and they had caused the head of the bone to be partially pushed out of the socket. There is a groove formed in the head of the bone, where it had rested upon the edge of the acetabulum. If this patient had lived some time longer, the bone would have completely escaped out of the socket, and become lodged on the dorsum of the ilium, so that there would have been a complete dislocation. As it was, the dislocation was incomplete, or what they call a subluxation.

The chronic diseases of the hip more frequently have their origin in the harder textures than in the synovial membrane. It is very common to call all diseases of the hip-joint scrofulous, but it is also very common to call any disease scrofulous. The fact is, that in most cases diseases of the joints are not scrofulous, not particularly connected with a scrofulous diathesis; but there is one disease of the joint which is especially of this description, and of that I shall speak to you next.

*Scrofulous disease of the hip.*—This disease has its origin in the bony structures. It occurs most frequently in children, and very rarely after twenty-five years of age. We meet with it especially in those children who have a fair complexion, light hair, blue eyes, and wide pupils; and who are delicate and precocious.

If you examine the morbid appearances in the early stage of the disease you find the synovial membrane, the ligaments, and the cartilages quite sound, but there is a peculiar alteration in the articulating extremities of the bones. You can even cut them with a scalpel without turning its edge, there being in them less earthy matter than natural. The cancellous structure of the bone is unnaturally vascular, and a small quantity of serous fluid is to be found in the



cancelli. But in a more advanced stage of the disease the bones become still softer, so that you may crush them by pinching them with the fingers; and, *now*, the cancellous structure, instead of being more vascular than natural, is less vascular, and, instead of a serous fluid, you find a yellow cheesy matter in the cancelli. The vascularity of the bone goes on diminishing, and in some parts of it the vessels become so much obliterated that the bone dies, and becomes an exfoliation. Here is a section [presenting it] of the femur and tibia, where you will see both stages of the disease. Here is another [exhibiting it], showing scrofulous disease of the bones as plainly as it can be seen in a preparation. If these dried preparations [exhibiting them] were out of the bottles you would be struck with the lightness of the bones, from want of earthy matter. Here is a drawing [exhibiting it] from a private patient who had disease in one hip-joint. On examining the opposite joint in which no disease had been suspected, there was the appearance of the head of the femur which you see in this other drawing occasioned by increased vascularity in some parts, and a deposition of cheesy matter in others. The surface of the bone next to the cartilage being diseased, you may well suppose that the cartilage itself will become diseased afterwards; and so in fact it does. The cartilage loses its very firm adhesion to the bone, and you may peel it off, and as you do so, a red vascular surface of the bone is to be observed underneath. The surface of the cartilage where you have peeled it off is a little rough. Here is a specimen [exhibiting it] illustrating what I now mention. The cartilage then begins to ulcerate. How is it that the ulceration of the cartilage takes place in these cases? The ulceration begins on that surface which is towards the bone; and as it is thus, as it were, eaten away, the space formed between the cartilages and the bone is filled up by coagulated lymph, which becomes organized. The ulceration goes on, getting deeper and deeper, till it penetrates through the cartilage, making at first a small opening, through which a probe may be passed until it comes in contact with the bone. The ulceration by degrees extends in every direction, and ultimately the cartilage becomes everywhere destroyed. Here is a drawing of the other hip-joint of the patient, to which I referred just now. There is a section of the head of the femur, and you see a yellow cheesy deposit within, while the cartilage has completely disappeared from the surface. As the disease makes still further progress, suppuration becomes established in the joint; but the cartilage in these, as in other cases, often ulcerates to a considerable extent without the formation of abscess. It was shown by Mr. Hunter that suppuration and ulceration are not necessarily connected; at least that you may have suppuration of the mucous and other membranes without their being ulcerated; and there are numerous facts connected with the pathology of the joints which establish the converse of this, showing that ulceration may take place without the formation of pus.

I will now state the symptoms which this scrofulous disease produces in the hip. The most remarkable thing is the small quantity of pain which it for a long time produces. Indeed, the scrofulous disease

of the bones, when the cartilages are unaffected, may exist without any pain whatever; and over and over again I have examined cases where children died affected with scrofulous disease to a great extent in one hip-joint, but where they have never complained of pain in the other hip, although the *post-mortem* examination proved that to have been affected also. Even when the cartilages begin to ulcerate there is at first only a trifling degree of pain. The disease is, indeed, most insidious in its origin. I was called to see a child, many years ago, in consequence of the parents having observed him to limp in walking for some time previously. That was all; he had never complained of pain, nor were there any other symptoms. I examined the joint, and found that I could push the head of the bone into the socket of the acetabulum, and move the limb in any direction without producing the smallest uneasiness. I took a great deal of pains to make out the case, and told the parents that if we did commit an error it was better that we should make it on the safe side, and I therefore advised them to lay the child up, as if the hip was diseased, although I was by no means certain that it was so. It was well that I did give that advice, for the next account which I had, some months afterwards, was, that there was a considerable abscess in the hip. I believe the poor child ultimately died. I have seen similar cases since, in which children have been brought to me in consequence of their limping, but without pain, and it has proved to be this scrofulous disease of the hip-joint. The disease may then go on for weeks and months, the child having some pain, but not a great deal, and very often when the relations are careless, the disease is quite unobserved for a long time. But by and by the child begins to make greater complaints, sometimes of pain in the hip, but more frequently of pain in the knee, and you observe him putting its hand to the joint last-mentioned. Then the pain becomes greater, but I suspect that in these cases the pain is never very considerable till an abscess is formed in the joint, and then certainly the child suffers enough. At this period it cannot bear to be moved, it lies in one position in bed, and generally twists itself round into a very awkward posture, making one hip very much bulge out, and the knees crossing each other, so that there is a great deal of deformity. The child screams from pain in the day, but he suffers chiefly at night; he wakes out of his sleep screaming, and complaining of frightful dreams. Bad dreams in children, and, I believe, in grown up persons, generally depend upon something wrong in the physical system. That which would be pain in the knee from the diseased joint if the child were awake, becomes a frightful dream if he be asleep. You must not wonder at this when you consider that even acid in the stomach is a frequent cause of disagreeable dreams in an adult. By and by an abscess presents itself in one place or another. Sometimes it makes its way on the inside of the thigh; sometimes backwards, showing itself behind the little trochanter; sometimes outside under the nates; and sometimes it penetrates by ulceration through the bottom of the acetabulum, into the cavity of the pelvis. In the latter case it not unfrequently bursts into the vagina or rectum; and I do not see why,



in some instances, the matter should not make its way into the urinary bladder, though I do not recollect having met with an example of this myself.

When an abscess presents itself externally from this disease, there is invariably another change in the condition of the limb. It becomes shortened, and this occurs in two different ways. If the head and neck of the bone be destroyed, and especially if the margin of the acetabulum be destroyed also, it is no matter of wonder that the muscles should pull up the thigh-bone, and that the limb should be shortened. Here is a drawing of the head of the thigh-bone where there is only a small part of the neck left, and where a very little action of the muscles would pull the thigh-bone out of the socket and lodge the remains of the neck upon the dorsum of the ilium. In these cases the limb is shortened just in the same way in which it would be shortened in a case of fracture of the neck of the femur. The toes, if left to themselves, turn outward, and the thigh may remain in a line with the trunk. But at other times the shortening of the limb takes place in another way. The cavity of the acetabulum is filled up by lymph or pus, or by lymph and pus altogether, the capsular ligament of the joint in consequence is dilated, the patient having undergone a great deal of suffering from the tense state of the capsule previously. Then the round ligament is destroyed by the ulceration which has already consumed the cartilage. The head of the femur is pushed from the joint until it passes beyond the margin of the acetabulum, and then the muscles pull it upwards, and lodge it on the dorsum of the ilium. Sometimes, when the head of the femur is dislocated, it will be nearly entire; in other cases it is partly absorbed. The dislocation is generally in the same direction, and here as in those other cases, in which dislocation arises as a consequence of inflammation of the synovial membrane; the dislocation being upwards and outwards the limb is much shortened and the toes are turned inward. There is one circumstance which favours the escape of the head of the femur from the socket of the acetabulum, and also favours the escape of the remains of the neck wherever the head has been destroyed; and that is, the position in which the child generally lies if left to himself, with his knee bent inwards so as to cross the sound limb. This cannot be done without making the trochanter project on the side of the disease, and this favours the escape of the head of the bone.

There are a few cases in which dislocation takes place in another direction. I had a patient under my care who has now recovered, but who had, a few years ago, disease in the hip-joint, and there the head of the femur has been dislocated forwards. It may be felt upon the ramus of the pubes, the great trochanter being, of course, placed farther back than natural, and the toes being turned outward. The child is better off than when the dislocation is upwards and outwards. There is, it is true, a little shortening of the limb, and the child has the toes turned out, but she can walk very well nevertheless.

I need not tell you that these cases of the hip-joint, if they proceed to the last stage, are very dangerous. But why should the disease

be dangerous? The hip-joint is not a vital organ. The fact is, that disease of the hip-joint is very rarely the immediate cause of death; but when an abscess has burst externally, discharging matter, and has continued to do so for a long time—when the patient has been long exhausted by suffering and night perspirations, disease takes place in the thoracic and abdominal viscera. Such circumstances are always favourable in bad constitutions to the production of disease, especially in the lungs and mesenteric glands. In like manner scrofulous persons may become phthisical when the constitution has been weakened by ague, by a course of mercury, by the venereal disease, by scarlet fever, or measles, or anything else.

I mentioned that a great aggravation of pain takes place when suppuration is established in the joint. The escape of the head or neck of the thigh-bone from the acetabulum tends not at all to diminish the patient's sufferings, but rather to increase them. When this has taken place, the patient, of course, is relieved so far as the tension is concerned; but he now suffers from another cause. The head of the thigh-bone in some cases, and the ulcerated neck of the femur in other cases, coming in contact with the soft parts in the vicinity of the joint, keeps these parts in a state of irritation, and every attempt to remove the limb, even the slightest, is a source of torment.

---

## LECTURE XXXI.

### ON DISEASES OF THE HIP-JOINT. (*Continued.*)

THERE are two important circumstances in the history of the scrofulous disease of the hip, which I neglected to notice. One is, the shrunk, flattened appearance of the nates. This appearance is not, in fact, an absolute diagnostic mark of disease in the hip-joint, though it does usually accompany it. It arises simply from the wasting of the muscles. If you tie up one arm the muscles will waste; if it be painful to use the knee, and it be not employed, the muscles of the thigh waste; if it be painful to use the ankle, the muscles of the leg waste; if it be painful to use the hip, the muscles of the hip waste; and the largest muscles of the hip are those situated posteriorly, the glutæi. These are the muscles of which the wasting is most perceptible, and thus you will understand the reason of the altered form of the nates. The flattened appearance of the nates may occur, not only in cases of diseased hip, but wherever there is anything which prevents the hip-joint from being moved; as, for instance, in that paralytic affection to which young children are liable. I have known a painful tumour in the groin, and disease in the thigh-bone produce the same effect, although the hip-joint was perfectly sound.



In some cases there is an alteration in the appearance of the nates from another cause. If the acetabulum be filled up with lymph, the head of the thigh-bone must be pushed more or less out of the socket, and this being the case, the great trochanter must project farther on the side of the disease than on the other, so that the nates become actually widened. Then, again, if the head of the thigh-bone be quite pushed out of the socket, and lodged on the dorsum of the ilium, the appearance of the nates must be different from what is natural. The great trochanter is prominent behind, and the head of the thigh-bone may be felt or even seen through the wasted glutæi muscles lying on the dorsum of the ilium.

Another of the symptoms of this disease is an apparent elongation of the limb. In the advanced stage of the disease the limb is always shortened; and I have explained to you how that occurs. But in the early stage of the disease there is sometimes the appearance of elongation, and there may, indeed, be some absolute elongation, though it cannot be much; for if you look at the skeleton you will see that the acetabulum looks a little downward, but more outward. If the acetabulum be filled with lymph or matter, and the head of the thigh bone be pushed out, this must be in the direction outwards rather than downwards. The absolute elongation of the limb can never amount to more than half an inch, yet it appears sometimes to be elongated to the extent of two inches. This arises from the distorted condition of the pelvis. It makes with the spine an obtuse angle on the side of the disease, and of course an acute angle on the other side. The tuberosity of the ischium is lower on that side than on the other. Observe the position in which the patient places himself when he stands. In order to save the diseased hip from supporting the weight of the body, as much as possible, he throws his principal weight on the foot of the sound limb, while he advances the other foot merely to steady himself. But this cannot be accomplished without the tuberosity of the ischium being a little depressed. The apparent elongation of the limb often vanishes when the patient has been some time in bed. Occasionally I have seen an apparent shortening of the limb, without a real shortening, produced by the pelvis being twisted in an opposite direction.

In order to know whether a limb is shortened or elongated, it is not sufficient to look at a patient as he lies in bed. You must lay him flat on his back, and take care to place the two limbs parallel to each other, so that a line which passes from the patient's chin straight over the navel and the symphysis pubis, should go exactly between the knees. When you have placed him in this position, the two thighs making exactly the same angle with the pelvis, you measure with a tape from the anterior superior spinous process of the ilium to the patella. It is only by this method that you can acquire a knowledge of the comparative length of the two limbs. If you trust to your eye, and not to the measurement with a tape, you will be continually deceived.

## PRIMARY ULCERATION OF THE CARTILAGES.

I give this name especially to a class of cases in which ulceration of the cartilages takes place in a different way from either of those already described. The disease begins in the harder textures; but it is not preceded by that soft or scrofulous condition of the bones which I then described. The first thing that you observe, if you happen to have the opportunity (as I have had many times), of examining the body after death, where the patient has died in the early stage of the disease, is a destruction of the cartilage by ulceration. Here is a very fine specimen [presenting it] of what I now mention. Looking at it, you will see that the synovial membrane and the ligaments are in a natural condition; that the cartilage is absorbed from a considerable portion of the acetabulum in two spots; and that the cartilage covering the head of the bone has not its natural structure, but is converted into a sort of fibrous substance. The soft parts are in a natural condition, and also the bones. The latter are perfectly hard, having none of the scrofulous alteration which I mentioned in the last lecture. There are other specimens on the table showing similar appearances.

Now this ulceration of the cartilage I believe to begin in different ways: sometimes in the cartilage itself, which becomes converted into a fibrous substance first, and that fibrous substance becoming ulcerated afterwards. Here is a specimen, in which you perceive the disease in these two different stages; for while the cartilage of the head of the femur is converted into a fibrous substance, that of the acetabulum is completely absorbed. Here is another preparation [showing it] where the cartilage is converted into a fibrous substance, actual ulceration not having as yet taken place. There was a body in the dissecting-room, in which many joints were affected in this manner. In some the cartilage was converted into a fibrous substance; in others it was ulcerated away, and the carious surface of the bone exposed. In some joints the disease had gone to a greater extent than in others. Here is a preparation of two patellæ, where you see ulceration of the cartilage going on. In one the cartilage is merely converted into a fibrous substance; in the other it is completely destroyed by ulceration.

Then I have reason to believe that in other cases the disease originates not so much in the cartilage itself as on the surface of the bone to which it is connected, and that it corresponds to what happens in cases of periosteal nodes. In syphilitic, mercurial, and some other nodes, you know that the first thing that calls your attention is often the thickening of the periosteum. But the fact is, that there is a previous alteration in the condition of the bone, which becomes inflamed and ulcerated under the periosteum, and then the thickening of the periosteum is consequent upon the disease on the surface of the bone. The bone is more vascular and of a darker colour than healthy bone, and you may peel the cartilage off its surface. In this specimen you perceive that the surface of the bone is of a dark colour,



and that the ulceration began on the surface of the cartilage which is towards the bone.

In practice I do not pretend to distinguish these two orders of cases from one another, any more than I can in practice distinguish those cases in which nodes are the consequence of disease beginning in the periosteum, and other nodes which are the consequence of disease commencing in the bones.

Ulceration of the cartilage, beginning with the conversion of it in the first instance into fibrous structure, is one of the diseases of joints to which persons are liable in old age. I have seen a person, sixty years of age, have disease and abscess in the hip-joint in consequence of this kind of ulceration in the cartilage. Ulceration of the cartilage sometimes takes place as a consequence of rheumatic affection. A patient, for example, came into the hospital who had been exposed to damp and cold. He had pains in the whole of the lower limbs, and in one shoulder. The man died from some other complaint—I believe from an attack of fever—and I examined the body. There was no affection of the soft parts, no disease in the bones anywhere, but in the right hip the cartilages were ulcerated to a great extent. There was pain in the other parts of the limb, but no ulceration of the cartilages anywhere else. There was pain in the opposite shoulder, but there were no morbid appearances in it when it was examined. I have seen several other cases where ulceration of the cartilage has been preceded by pain similar to that from rheumatism, but without any affection of the soft parts.

Ulceration of the cartilage sometimes takes place in a very remarkable manner, as a consequence of inflammation and abscess in the neighbouring parts. Of this I have met with many examples. Here is a case [presenting a specimen] in which the cartilages of the knee-joint are extensively ulcerated, but there is no disease in the softer textures—no matter in the joint. It was taken from a boy who had had compound fracture of the femur; and an enormous abscess in the thigh, contiguous to the knee-joint, had preceded death. I have seen several other cases where a large abscess in the neighbourhood of a joint has been followed by ulceration of the cartilages to a great extent. Mr. Mayo has published some cases of the same description.

In those cases in which the cartilages are ulcerated independently of the scrofulous disease of the bones, the progress of the complaint after the ulceration has taken place must be very similar to the progress of it in those other cases which I described in the concluding part of the last lecture. Pus is thrown out into the joint, and then the soft parts are affected, or the acetabulum being filled with lymph, the head of the thigh-bone is pushed more or less out of the socket: the ulceration of the cartilage extends, the bones become destroyed, the head of the thigh-bone is diminished in size, the margin of the acetabulum is more or less destroyed, the neck of the thigh-bone is drawn up and lodged on the dorsum of the ilium: and in other cases the head of the femur is pushed out of the socket, and there is dislocation. But I need not trouble you with a complete history of the

symptoms, which I described in the last lecture. You have, in fact, almost all the symptoms which I mentioned as occurring in cases of scrofulous disease of the bone.

But how are you to distinguish these cases in practice? You cannot distinguish them in all instances, but you may do so in most cases so as to make a diagnosis which will be very useful in practice.

In the first place you will judge something by the aspect of the patient's countenance. If he is not that kind of person whom you would judge to be predisposed to what is called scrofula, it would be a reason for suspecting that it is not a case of strumous affection of the bone. Such affection of the bone almost invariably occurs in early life, and there may be ulceration of the cartilages, independent of scrofulous disease of the bone, in early life also. But the latter may occur in advanced life as well; and if the patient be above twenty-five years of age, it is more likely that he will have simple ulceration of the cartilage than the true scrofulous disease. Another important diagnostic mark is this:—A much greater amount of pain attends the disease in its early stage, in cases of simple ulceration of the cartilage, than where the ulceration is combined with scrofulous disease of the bone. One most remarkable circumstance connected with scrofulous disease of the bone is, that there is so little pain in the first instance, the patient going on for weeks, and even months, limping, and yet the disease being scarcely noticed. But in simple ulceration there is generally severe pain at an early period. In scrofulous disease of the bone you have very little pain in general, till the cartilages are extensively ulcerated, and matter begins to form, but in the other cases there is a great deal of pain long before that period has arrived.

I have given you my notions of ulceration of the cartilages, but I should tell you that other pathologists have entertained different views respecting the functions of the cartilage, and its capability of being ulcerated. Among these pathologists I may mention especially Cruveilhier, in Paris, and my friend Mr. Key in this country: both of whom seem to regard the cartilages as being not vascular, and as incapable of ulceration, from the action of vessels belonging to itself. Mr. Key has indeed published a paper to show that ulceration of the cartilage is the consequence in general of disease of the synovial membrane. He describes vascular processes of the synovial membrane as projecting into the joint, filling it up, and then, as it were, eating away the cartilage.

Now I do believe that if these gentlemen had taken as much pains as I have done to examine the bodies of patients who have died in the *early* stage of these diseases, they would have come to a different conclusion. They seem to have examined the bodies of persons when the disease was in a late stage, and when the morbid appearances were deceptive. The first question is, are the cartilages vascular or are they not? The cartilages of children are undoubtedly vascular—nobody can hesitate to admit that—till the period of growth is over. Growth could not take place otherwise. If you cut the articular cartilage of a growing child you see the vessels, or



rather the sinuses, in which the blood flows very distinctly. The cartilages of children resemble the cartilages of adults in all essential circumstances. Some changes take place, as I shall mention presently, but still in all essential circumstances they resemble each other. Merely looking at the structure, you would say that if the cartilages of children are vascular, those of adults are vascular also. You see in this preparation, and in others taken from adult subjects, the alteration of cartilage into a fibrous structure; and how could such a morbid alteration of structure take place, if the part were not organized?

The epidermis, or cuticle, is not organized. You may have bad cuticle secreted; but being once secreted it does not become altered in quality. The nails and the hair are not organized; you may have bad hair and bad nails secreted, but these being once formed, they do not alter. But this preparation [exhibiting it] and a number of others, show that the cartilage does alter. It seems to me that this single specimen which I now hold in my hand is quite sufficient to prove the organization of the cartilage. Look at the two patellæ in this preparation; the cartilage in one of them is clearly undergoing a change of structure, while in the other it is entirely destroyed by ulceration. How can this be accounted for, except upon the supposition that the cartilage is organized? Then observe what happens to cartilage in its healthy state; how it is exposed to friction, and if there were not a power in the cartilage of regeneration, how could it bear the quantity of friction to which it is exposed during life? Take the example of a wild animal, with its limbs in constant motion, the cartilage constantly exposed to friction, except during the hours of sleep, yet all this produces no change in it. But if there were anything else there, an elastic substance, such as caoutchouc, or the hardest metal, as gold or platina, would it not be worn away? The living body is subject to the same mechanical laws as dead matter. The fingers of a mechanic would be worn out if their organization did not enable them to repair the loss occasioned by the destructive power of friction. Are not the articular cartilages placed under the same circumstances? How can you explain their durability, except by supposing them to be endowed with vital powers and organization?

You cannot see blood-vessels in the healthy cartilage of an adult; but does that prove that vessels in it do not exist? You cannot see vessels in the transparent cornea, but who doubts its vascularity?

Besides what I have already mentioned, it would be easy to indicate many other changes in cartilage which must be referred to organization and vascularity. The cartilage of a young man and the cartilage of an old one differ in many respects. There is a difference of colour, of thickness, and consistence, sufficiently marked, which cannot be the effect of friction, which can only be attributed to a change taking place in the cartilage itself.

I have already adverted to the analogy between the cornea of the eye and the articular cartilages. But it may be said that in the

cornea you have the proof of its being endowed with vessels, in its liability to inflammation; and it is quite true that in long-continued ophthalmia you may see the blood-vessels running into the substance of the cornea, injected with blood. But you may see just the same thing in the cartilages of the joints. I have observed it distinctly in many instances. Two or three instances of this are recorded in my work on Diseases of the Joints. A man, for example, had that scrofulous disease of the ankle which I described in my last lecture. The cartilage in some parts was ulcerated, in others it was beginning to ulcerate. Where it was beginning to ulcerate there were red spots, into which I could distinctly trace blood-vessels shooting from the neighbouring bone, exactly corresponding to the blood-vessels which shoot into the transparent cornea in cases of ophthalmia. Mr. Mayo has described a case of the same kind, and I believe that in the Museum of King's College the specimen which he met with is preserved, and that the vessels running into the cartilage are seen injected with size and vermilion. Now taking all these things into consideration I really know not how we can refuse our assent to these propositions: first that cartilage is organized, and secondly, that cartilage, like other parts which are organized and possessed of vital properties, is capable of ulceration.

To illustrate the subject still further:—In the subject from which this drawing was taken, there was an extensive absorption of the cartilages of some of the tarsal bones, the os calcis, the os naviculare, and astragalus. Now observe how the absorption has taken place. In some parts the cartilage has disappeared altogether, and the bony surface is exposed. In other parts the cartilage is partially absorbed; it is rendered thin and semi-transparent, so that you can see the brown colour of the bone through it; and the absorption has taken place *on that surface of the cartilage which is towards the articular cavity, while the layer towards the bone remains entire, and retains its natural adhesion to it*: a fact quite incompatible with the notion of its being absorbed by the vessels of the bone to which it adheres. There was no disease of the soft parts.

The preparation which I now show you is of great interest; and in order that you should understand its relation to the present inquiry, I must briefly explain the patient's case.

There was a compound fracture of the thigh, and a portion of the femur was sawn off, for not till then could the fracture be reduced. An immense abscess formed in the thigh, near the knee-joint, but not communicating with it. The boy sank and died, and on examining the body we found the large collection of matter which I mentioned in the thigh. The knee-joint externally presented no indication of disease; there was nothing the matter with the synovial membrane or the ligaments, no effusion of pus, or serum, or lymph, in the joint. All that we could discover was the disappearance of the cartilage. Now observe how it has disappeared. In the centre the cartilage is altogether absorbed, and the bone exposed. Then, in some parts, the cartilage is partially absorbed; the surface of it



towards the cavity of the joint having been taken away, while that which is next to the bone remains entire, and has its natural adhesion to it. You will see the cartilage in some parts putting on a peculiar grooved appearance, as if you had dug out a piece of it with a chisel. How could the cartilage be absorbed in this case, except from the action of its own vessels?

Mr. Key, in his interesting paper on Ulceration of the Cartilage, has given a drawing of the knee-joint, where the cartilage was affected in this manner—that is, partially absorbed on the surface towards the articular cavity; and this was in a case where the original disease had been inflammation of the synovial membrane. Large processes of inflamed synovial membrane are seen hanging pendulous into the joint, and he supposes that these pendulous processes of the synovial membrane came in contact with the different parts of the cartilage, and were the agents through which the absorption had taken place.

Without entering into the question as to how far this explanation is correct, as applied to this particular case, I may observe that it certainly is not applicable to the cases of which I have just given you the history, any more than it is to the cases of ulceration of the cartilage published by Mr. Mayo in the *Medico-Chirurgical Transactions*; in none of which these pendulous excrescences of the synovial membrane existed.

At the conclusion of this investigation, you will ask “what becomes of a joint of which the cartilage has been destroyed by ulceration?” If it be extensively destroyed without suppuration, the case may be compared to one of simple fracture; and if there be suppuration, it may be compared to one of compound fracture; and in either instance the ulcerated surfaces of the bone come together and ultimately become united. Bony ankylosis, however, takes place very slowly in the scrofulous disease which I described in the last lecture; the bond of union being for a very long time nothing but a soft ligamentous substance. But in other cases, where the cartilage is ulcerated without scrofulous disease of the bone, bony ankylosis takes place, I believe, readily enough. There may, however, be absorption of cartilage to a considerable extent, without it being followed by bony ankylosis. I showed you, in the last lecture, a drawing where the cartilage had been ulcerated in several parts of the patella and condyles of the femur, in consequence of inflammation of the synovial membrane. The patient died a year afterwards from disease of the chest; and on examining the body after death, I found that where the cartilage had been absorbed, it was replaced by a sort of ligamentous membrane. You will see the same thing in this preparation, where the cartilages of the hip have been partially absorbed, and replaced by a dense membrane. I cannot say whether this substance ever is or is not converted into true cartilage; perhaps it may be; but you know how difficult it must be to acquire anything like satisfactory evidence on this point.

## TREATMENT OF DISEASES OF THE HIP.

If you could *always* be exactly certain as to the nature of the disease in the hip-joint, of course you would be able to apply your remedies more precisely than you can with that sort of doubtful diagnosis which we are compelled to make in some cases. The diagnosis of diseases of the hip is more difficult than the diagnosis of the same diseases in other joints, simply for this reason, that the hip is not a superficial joint, but is covered by a great mass of muscle, and you cannot examine it with the hand as you can the knee, the elbow, or the wrist. We are necessarily compelled to depend more upon the history which the patient gives of the disease than when the other joints are affected. This history, going back as it often does to a long period, and in a great number of instances having to be drawn from very young persons, is often not much to be depended upon. There are, however, many cases of disease of the hip in which we are able to say at once what kind of disease exists in it; there are others where we must give a more doubtful opinion; but even here a careful investigation will generally enable us to make such a diagnosis as will be sufficient to lay a tolerable foundation for our practice.

There is one remedy which is applicable to all cases of disease of the hip, and this happens in all of them to be the most important part of the treatment, at least of the local treatment; and of this I shall speak first.

If your leg were inflamed, and you were to rub it a dozen times every day, would you not make the inflammation worse? If your leg were ulcerated, and you were to rub it in the same manner, would you not prevent the ulcer from healing? nay, rather, would you not make the ulcer spread? If the hip-joint, then, be inflamed, and you move it several times a day, will not the inflammation be kept up? If the cartilages or bones, or both are ulcerated, and the joint be moved, and the ulcerated surfaces are rubbed against each other, is it not to be expected that the disease will be aggravated? Have we not a right, under all circumstances, to expect that motion or exercise of the hip-joint will tend to aggravate the disease, whatever it may be; and that the keeping of the joint in a state of perfect repose will be a most important part of the treatment to be employed. In all cases of affection of the hip-joint, without inquiring into the nature of the disease, the first thing that you have to do is to keep the joint in a state of perfect repose. This may be accomplished in different ways. In one of the cases now in the hospital a quantity of bandage was rolled upon the pelvis and the upper part of the thigh; then stripes of adhesive plaster were put over the bandage; then other bandages were applied, and other stripes of plaster; and so on till a great mass of bandage and plaster, all sticking together, was fastened round the pelvis and round the upper part of the thigh. This has fixed the boy's hip-joint very firmly, and is very nearly the method which Mr. Scott, of Bromley, employs for all diseases of the



joints. He, indeed, uses mercurial ointment spread on lint under the plasters; but this I apprehend to be perfectly unnecessary. The good which he attributes in diseased hips to the ointment, I attribute altogether to the support afforded by the plaster and bandage, forming a kind of splint, and limiting the motion of the joint. This method, in the case up stairs, and in a number of others, is productive of very good results. But a still better method than this, in the majority of cases, is that of applying a splint adapted to the hip-joint, thigh and pelvis, such as are used for the knee and elbow, made of a very thick, hard, firm, strong leather, prepared without oil or other grease. This leather is prepared for the purpose, of cow's-hide; and the consequence is, that on putting it into water a little below boiling heat, it becomes as soft as wet brown paper, and you may cut it out to any shape you please, and mould it to the hip, securing it afterwards by a bandage, and leaving it to dry on. This splint cannot fail to fit the joint, and must therefore be easy to be worn. Altogether it answers the purpose very well when the thigh is not much bent on the pelvis. Where, however, this is the case, it is very difficult to adjust the splint, and the plasters and bandages which I mentioned just now are preferable. There is still another method of fixing and supporting a diseased hip, which you will see carried into effect in one of the patients up stairs. The lad is placed on Mr. Earle's fracture or invalid bedstead. He lies there on his back; the shoulders are raised by one inclined plane, the thighs are raised by another, and the legs are supported by a third; so that he lies on three inclined planes, and cannot slip upwards or downwards. The thigh is kept at that angle which is most convenient to the patient, and the two limbs are placed parallel to each other. Lying in this manner, the patient, you perceive, has very little motion; he can scarcely manage to turn, and has no inducement to attempt it. In this bedstead there is a sort of trap-door beneath, filled up with a cushion, which may be taken out when necessary, and which answers the purpose of a bed-pan, so that the patient has his evacuations without being in the smallest degree disturbed. This method is especially applicable to those who have passed the age of childhood, and in whom the disease is still in its most early stage.

It is of some moment that you should, before the disease is very far advanced, get the limb into a good position. A child especially has always a tendency to throw one knee over the other, and to lie on one side. The consequence is, that the thigh-bone gets twisted into an awkward posture, the pelvis and the spine are also twisted, and the whole figure is in a state of distortion. It matters not how trifling the disease may be, your first duty to your patient is to make him lie down at once. Take care to place him with his shoulders a little elevated, and his limbs parallel to each other, and thus you will prevent that ugly distortion of the whole body which always takes place where these precautions are neglected.

## LECTURE XXXII.

## ON THE TREATMENT OF DISEASES OF THE HIP-JOINT.

IN the last lecture I began the subject of the treatment of diseases of the hip-joint, and I explained to you that without reference to what the disease is, there is one kind of treatment applicable to all these cases—I may say, indeed, applicable to all cases of diseased joints—namely, the taking away of the function of the joint, and keeping it in a state of complete immobility. I repeat this observation, at the risk of being tedious, because it is a rule of the first importance. This is the principal improvement in the local treatment of diseased joints made of late years. Formerly, patients were allowed to use their limbs, and now they are not allowed to do so, the bones being kept in a state of repose, with as much care as in a case of fracture.

Then I explained to you that in cases of diseased hip there are different ways of attaining this object; that sometimes you may apply a leathern splint, something like what we apply to the ankle or the knee; that at other times we put on a great quantity of plaster and bandage, in alternate layers; and that in other cases it is quite sufficient to keep the patient lying on his back on one of Mr. Earle's invalid bedsteads.

In cases of inflammation of the synovial membrane, you are to employ that treatment which you would employ in other cases of inflammation. When the inflammation is very intense, it may be necessary to take away blood from the arm; but it is generally sufficient to bleed locally, by cupping on the nates, or by applying leeches to the groin; or you may cup on the nates first, and then apply leeches to the groin afterwards. The patient should have his bowels kept open; and if there be any febrile excitement of the system, he may require antimony or some other diaphoretic medicine. However, in general, inflammation of the synovial membrane of the hip is of a chronic character, not disturbing the constitution, nor requiring remedies of this last-mentioned kind.

As the inflammation recedes, you may apply blisters in the neighbourhood of the joint—on the nates in the groin also. The skin of the groin is nearer to the hip-joint than the skin of the nates, and blisters and other local applications may be made in the groin with very great advantage.

Occasionally other remedies may be employed with advantage. In cases of inflammation of the synovial membrane of the hip, as well as in cases of this disease when it occurs elsewhere, especially in private practice, among the more affluent classes of society, who live luxuriously, and do not take sufficient exercise, or in those who expend their nervous energy in intellectual pursuits, and have not



sufficient left for the physical part of the system, you will find it connected with a gouty diathesis. The patient complains of acid generated in the stomach after his meals; of heartburn; he is flatulent; he rests uncomfortably at night; he has flying pains about him besides those of the hip; the urine which is made three or four hours after dinner is voided clear, but when it cools it deposits a great quantity of sediment; sometimes there is a pink sediment, which stains the chamber utensil, making it look like what is called a *pink saucer*; and sometimes there is a yellow sediment. These sediments are composed chiefly of lithate of ammonia, and they indicate a tendency to acidity in the stomach, and to gout in the system.

When inflammation of the synovial membrane of the hip occurs under these circumstances, in addition to the treatment, which I have already mentioned, you may employ other remedies. Occasionally give an active purgative, and keep the bowels gently open in the meantime. About three or four hours after breakfast, and three or four hours after dinner, let the patient take a dose of magnesia, or potass, or soda, to neutralize the acid which there is then in the stomach. I do not think that medical men, in general, when they prescribe magnesia and the alkalies, are sufficiently careful to tell their patients at what particular times to take them. They are to be taken when there is acid in the stomach to be neutralized. There is none in the morning before breakfast; and these alkalies taken in the morning, at any rate do no good, and probably are injurious. There is the greatest quantity of acid in the stomach about four hours after a meal, and subsequently to that period it has begun to get into the system, and then produces the secretion of lithic acid by the kidneys. Your object is to neutralize the acid before it passes into the circulation, and you must do that when the acid is in the stomach. A patient told me the other day, who had inflammation of the synovial membrane of the knee, accompanied with this pink deposit, that he had observed that if he took the alkali three or four hours after a meal, there was no pink deposit; but that if he took it five or six hours afterwards the deposit appeared as usual. Another remedy, very generally useful in these cases, is *colchicum*. If the pain in the affected joint be very severe, and it is connected with that peculiar state of the system which I have just mentioned, the tongue being at the same time tolerably clean, you may give half a drachm of *vinum colchici* two or three times daily, for a few days, till it begins to create nausea, or to disturb the bowels. But in less urgent cases I prefer giving it in a milder form. You may exhibit two or three grains of *ext. acet. colchici* every night, combined with a small dose of the compound extract of colocynth. This must be taken for ten or twelve successive nights. Sometimes the *colchicum* produces yellow stools, showing that it stops the secretion of bile; and to counteract this tendency you should add one or two grains of blue pill to each of the pills.

There are other cases of inflammation of the synovial membrane of the hip, connected not properly with a gouty tendency but with rheumatism, and where the patient may derive great benefit from

taking some mercurial preparation—Plummer's pill, or calomel and opium, for example: and the latter may be exhibited in severe cases, so as to affect the gums.

Inflammation of the synovial membrane of the hip, when it has any sort of attention paid to it, very seldom goes on to any ill consequences. In a very few rare cases, as I have already explained to you, it terminates in what has been called spontaneous luxation of the hip. It seldom terminates in absolute ankylosis, but very frequently there is a great degree of stiffness of the joint for a considerable time afterwards. Ankylosis, however, occurs occasionally. A patient was admitted into this hospital, who was observed to have something odd in his gait as he walked, but he did not complain of his lower limb at all, and therefore nobody took much notice of it. He had some pneumonic disease, of which he died under the care of the physician; and on examining the body after death, we found that there was complete ankylosis of one hip, but not bony ankylosis. There were the remains of the capsular ligament and synovial membrane closely adhering to the parts below: there was a thin layer of cartilage between the bones, but merely a single layer, as if the cartilage of the head of the femur and acetabulum had become united to each other. I do not know how the circumstances of this case can be explained, except by supposing that it was the result of inflammation of the synovial membrane. Had the ankylosis been the consequence of ulceration of the cartilage, the cartilage would of course have disappeared.

The treatment of those cases, which unfortunately are of such frequent occurrence, of scrofulous disease of the hip-joint in children, having its origin in the bones, and then extending from them to the cartilages and other structures, is very simple. If you are called to a child in the early stage of the disease, when he limps and complains a little of pain, or perhaps does not complain of pain at all, the local treatment should be simply negative. *Keep the hip-joint in a state of perfect immobility*, which you may accomplish by a leather splint, by plaster and bandages, or merely by the invalid bedstead. I repeat that *this is all the local treatment which the disease requires, if you are called to the patient in the first instance*. I remember the time when in these cases we were in the habit of applying leeches, blisters, and issues. I am satisfied from all I have seen of the two kinds of practice, that the abstraction of blood and the application of counter-irritants, not only do no good, but that on the contrary, by weakening and worrying the patient, they sometimes do great harm. In my own practice I have been much more successful since I laid aside all these painful remedies, and relied merely on perfect rest.

Perfect rest will do a great deal towards stopping the progress of the scrofulous disease in the joints; that is, when it has taken place in the bones, it will prevent the ulceration of the cartilages; if the cartilages are ulcerated, it will prevent the ulceration extending further; and if matter is not yet formed, it will retard, or even prevent,



its formation. Yet after all, this negative treatment does not strike at the root of the disease, which is not in the part in which the disease shows itself, but in the patient's constitution. You may well suppose, that mere rest will not correct a scrofulous constitution; and that for this purpose you must have recourse to other means.

To lay down any rule of constitutional treatment, such as will be applicable to all cases, is not possible; you must exercise your discretion in each particular instance, and I can only undertake to give you some general notions as to the plans which you should pursue.

In the first place, then, you should take care that the digestive organs are properly attended to: if the bowels are confined, purgatives should be administered according to circumstances. If there be a deficiency of bile in the evacuations, a little mercury should be carefully exhibited, to correct the faulty secretion. The child will then require some kind of tonic. Various tonics may be employed with advantage, some in one case, some in another; but the remedy in which my experience leads me to place the greatest confidence is some preparation of iron; and in children I find nothing answers better than steel wine. I do not mean the modern steel wine, which contains scarcely any steel, but the old wine, made according to the old Pharmacopœia, and which is almost of a black colour. There is no occasion for giving it in large doses. To children of three or four years of age, give a drachm twice daily; if the child be a little older, give two drachms; and to one approaching the age of puberty, you may give three or four drachms for a dose. It is not important in these cases that the steel should be taken in a large quantity, but it is important that it should be continued, with occasional intermissions, for a great length of time. The best cures that I have seen, not only in cases where the hip-joint was affected with the scrofulous disease, but also where the disease was situated in the knee and other joints, and even in the spine, have been in those cases in which steel has been given, off and on, for a great length of time—for three or four years or even longer. I give it for a month, then stop it for ten days; I then give it for another month, then stop it for ten days again, and so on, combining purgatives with it, according to circumstances. This system, in four cases out of five, agrees with the child exceedingly well. You will not see any marked improvement at the end of the first month, but you will at the expiration of six or twelve months. I could tell you of families where the most delicate of the children have by the long-continued use of steel, in this manner become the strongest of the whole set. I do not think that steel in these cases is, under ordinary circumstances, given to a sufficient extent. The parents get impatient of giving the child medicine every day, as well as of the expense of medical or surgical attendance, and the medical man himself naturally becomes tired of his attendance under these circumstances. There is no perceptible improvement from day to day, and it is difficult to command confidence where the change is not visible perhaps for six months, and to induce the patient or the parents to persevere in the use of this, or any other remedy for so long a time.

But such perseverance is really what is required, and it is necessary to explain it to the parents in the first instance. Of course I am now supposing that steel agrees with the child; but there are some who cannot take it except in small doses; and there are others who cannot take it at all without its producing headache, making them costive, heated, and feverish. Other tonics may then be exhibited, such as quinine, some of the bitters, or what, perhaps, is better still, the alkaline infusion of sarsaparilla. The latter is a very excellent and useful preparation, and I will give you a formula for preparing it, as it is not in the *Pharmacopœia*:—To make a pint of the infusion, you take two ounces of the root of Jamaica sarsaparilla, cut and bruised; then you add two drachms of liquorice root, to cover the taste of the sarsaparilla; to this you add two drachms of the *liquor potassæ*, and about eighteen ounces of boiling distilled water; macerate the whole in a close vessel for about twenty hours; strain off the liquor, and you may give the patient, according to his age, from four to six or eight ounces of this infusion daily.

But there is still another method of improving the child's constitution: let him live in the fresh air as much as possible. All that I have seen leads me to believe that nothing tends more than this to strengthen a delicate constitution: of course I mean, not that the child should be exposed to cold, or wet, or night air, but that he should pass his time out of doors in fine and temperate weather. In the summer his couch may be placed in the garden, and he may remain there during a great part of the day; if it can be managed that he should reside at the sea-side, it would be so much the better;—I say *reside*, for as to his being taken for a month or six weeks to a sea-bathing place, the benefit which he will derive from it is not such as to compensate for the mischief which may arise from the journey, especially if it be to a distant place.

The period during which it is necessary to keep the patient in the recumbent posture, must vary very much in different cases; in some cases three or six months may be all that is wanting; in others, the patient must perhaps be kept lying down for twelve months; and where the joint has been destroyed by an abscess, and the bones have become displaced, even a much longer period may be necessary: but I shall speak of these last cases presently.

The treatment of those cases in which the cartilage of the hip ulcerates, independently of that scrofulous disease of the bones which I have just described, and which we call, by way of distinction, cases of primary ulceration of the cartilage, (though it may sometimes be originally disease of the surface of the bone, and sometimes of the cartilage itself—two orders of cases which I cannot pretend to distinguish in practice,) in many respects resembles the treatment of scrofulous affection of the hip-joint. The patient must be kept in the same state of perfect immobility; but he does not in general require the same treatment otherwise. Very often he will derive much benefit from a course of sarsaparilla; at other times he will derive still greater benefit from being put for a certain time under the influence of mercury. In many of these cases he will derive



benefit from the employment of what we call *counter-irritation*. Although I do *not* recommend the employment of blisters and caustic issues in other cases of disease of the hip-joint, yet I *do* recommend them here. You may apply a blister to the nates, or to the groin, or you may make a caustic issue behind the trochanter large enough to hold twelve or fifteen peas. Usually, however, I keep the issue open, not by peas, but by rubbing the surface of it about once in a week with the caustic potass, dressing it in the meantime with the savine cerate. You may distinguish where you ought and where you ought not to employ these means with sufficient accuracy; thus, if the disease has not been marked by much pain previous to the formation of matter—if there has been limping for a long time with scarcely any suffering—you may conclude that the case is one of scrofulous disease, and that counter-irritations are unnecessary; but if the disease has throughout its whole course been accompanied by pain, becoming gradually more severe, then you may conclude that it is not one of these scrofulous cases, and that counter-irritation will be beneficial. I speak of pain, observe, previously to the formation of matter; for when matter is formed in the joint, there is severe pain in all cases. Where the pain is very severe, and is not relieved by a caustic issue behind the great trochanter, you will sometimes afford great relief by making a seton in the groin, in the fore part of the joint. I suppose that the pain in part depends on irritation communicated to the anterior crural and obturator nerves, and that this will explain the relief obtained from a seton made in their vicinity.

I have hitherto said nothing regarding the treatment of abscess connected with the hip-joint, having reserved my observations on this subject to the last, because the treatment of abscess of the hip is pretty much the same under all circumstances—whether the disease has begun in the synovial membrane, the bones, or the cartilages. Whenever you find that the patient complains of a great aggravation of his former symptoms, when the pain becomes intolerable, the limb starting at night, and the pulse becoming increased in frequency, you may always suspect that matter is forming in the joint, and that the acetabulum is becoming filled up with matter and lymph. You may, under these circumstances, employ fomentations, which may help the patient a little, but not much. If the pain be excessive, you must give opium, though I am not desirous of giving it without ample reason for doing so, on account of the ill effect which it produces afterwards on the digestive organs. By and by the abscess presents itself externally, and this is almost invariably followed by a shortening of the limb, produced in one or other of the ways which I mentioned formerly.

When the abscess presents itself, you will feel it, and you may even see it; but if it is yet deep-seated, I would not advise you to open it, because, first (especially in the cases of very delicate children), there may be a loss of blood which the patient cannot afford, and, secondly, because under these circumstances the wound will heal directly, and the matter will become pent up as it was before. An exception, however, to this rule may be made in those cases in

which you find an abscess burrowing under the fascia, instead of coming forward to the surface, and then it may be right to make an opening through the fascia to prevent the destruction of the parts below.

Different methods have been recommended for opening these abscesses; but I shall not occupy your time by a critical discussion as to their respective merits. Some have advised an oblique or valvular opening, others a direct opening; some have advised us to keep the orifice open, and others to heal it; some have advocated the use of the lancet, others of the caustic potass. I shall merely tell you what, according to my experience, is the best mode of managing these cases. The patient having been kept for a considerable time in the recumbent posture, when the time arrives at which you think proper to open the abscess, do it with an abscess lancet, or double-edged scalpel, and make a large opening, so that the matter may run out freely of itself; and that there may be no obstruction to its discharge from the opening becoming blocked by curdly matter or flakes of lymph. But having done this, be satisfied that you have done all you ought to do. *Never squeeze and compress the parts to force out the matter; never move the limb for the same purpose, nor allow others to do so.* If you attempt to squeeze out the matter you bring on inflammation in the cyst of the abscess,—you induce bleeding from the small vessels on its inner surface—the blood collected in the cyst of the abscess mixes with the pus, and becoming putrid, produces great constitutional disturbance, taking on the character of typhus fever. It is said that bad symptoms often come on, on opening an abscess; but I believe that for the most part it is not the opening of the abscess, but the rough hand of the surgeon in trying to squeeze out all the contents of the abscess, that does the mischief.

Then, are you to bring the edges of the wound together, and heal it, or not? My own practice is to apply a poultice, and to leave the wound to take its own course. On the whole, I would rather that the wound did not heal; but I do not usually endeavour to prevent it healing by introducing lint into it, lest this irritate the inner surface of the abscess, and excite a mischievous inflammation in it. If it does not heal, it is so much the better; the matter continues to flow out, and the cyst of the abscess gradually contracts. If the wound does heal, the matter will of course be again collected, and you must make another opening. If the abscess should present itself in two or three different places, do not be satisfied with one opening, but make an opening wherever it presents itself, as otherwise there can be no proper evacuation of its contents.

In the majority of cases in which abscess has formed, the cartilage is destroyed, the bones are carious, the synovial membrane and ligaments have in great measure disappeared, so that there is really no joint left. The case may now be compared to one of compound fracture, and you are to treat it just in the same manner, by keeping the limb in a state of perfect immobility, and taking care that the matter should flow out as fast as it is generated; but it may take a



long time for this abscess to heal—months always; and even years in some cases. But ankylosis will be going on all the time, though the period of its completion varies. In the scrofulous disease of the bone, it takes a longer time for bony ankylosis to be effected. If you examine the limb many years afterwards, you will often find that the ankylosis is not by bone, but by a sort of ligament. But when the cartilages are ulcerated independently of the scrofulous disease of the bones, the bones being in a tolerably healthy state, bony ankylosis takes place at a much earlier period.

As soon as you find that the thigh and the pelvis move completely together, there being no perceptible motion of the joint, you may be satisfied that there is sufficient ankylosis to enable you to allow the patient to begin to take exercise on crutches.

In all cases the patient experiences great pain at the time that the head of the thigh-bone is being pushed out of the socket, or if the head is destroyed; when the neck of the femur is drawn up and lodged above the acetabulum: and this pulling up of the head or neck of the thigh-bone is always followed by great and permanent distortion of the limb. Can you do anything to prevent those sufferings, and the subsequent distortion? The patient suffers because the head or the neck of the femur is leaving its own place, and getting into new parts which are not intended to have the rough bone in contact with them. I have in some instances endeavoured to prevent this by mechanical means,—that is, by the application of an extending force to counteract the action of the muscles: and a very slight force is sufficient for this purpose. It is astonishing what comfort I have known this to give the patient in some instances. As soon as you have reason to think that the limb has begun to shorten, you may begin to make a gentle extension below, so as to counteract the action of the muscles above; and experience shows that this may be done with the most perfect safety.

As to the mode of accomplishing this object, it is sufficiently simple. The patient is to be placed on his back, on the treble-inclined plane of an invalid bedstead, with his shoulders and his thighs a little elevated. An upright piece of wood is fixed to the foot of the bed, and in this upright piece of wood there is a pulley, which pulley is just in a line with the thigh-bone. There is a bandage round the patient's thigh above the knee; a string extends from each side of the bandage, and joins another string which passes over the pulley. At the further extremity of this last string there is a very light weight attached—a few ounces of shot or some copper penny pieces put into a basket are sufficient in the case of a child. You often require a great extending force to counteract the powerful action of the muscles in reducing a dislocation, but a very slight force, constantly acting, is sufficient to counteract the weak action of the muscles in these cases. My experience of this practice leads me to believe that by the adoption of it you may prevent a great deal of pain and suffering belonging to these cases, while at the same time this method has a tendency to lessen very much the ultimate distortion of the limb.

I have spoken to you in these lectures of the ordinary diseases of the hip-joint; and it is not my intention to enter into the history of the diseases of more rare occurrence. I have known instances of scirrhus disease and fungous hæmatodes of the hip; and then there are hysterical affections which simulate the symptoms of other diseases. A knowledge of these hysterical affections is of great importance, in order that you may not be in danger of confounding them in practice with cases of actual local disease.

---

### LECTURE XXXIII.

#### ON TIC DOULOUREUX OR FACIAL NEURALGIA.

“JOSHUA KINGETT, forty-eight years of age, was admitted into the hospital on the 14th Oct., 1835. On his admission he stated that for the last ten months he had been suffering the most severe pain, which was entirely confined to the left side of the face; that this pain at first had an intermittent character; but that latterly it had become constant; and at times was so acute that, to use his own language, he would have rejoiced if any one had knocked him on the head. At these times he seemed almost to lose the sight of his left eye, and very often suffered from toothache. At the time of his admission the pain was chiefly confined to the cheek and nostril, which were puffy, and tender to the touch. There was no disease to be observed on looking into the nostril. The bowels were always torpid, and the tongue was covered with a whitish-brown fur. He was directed to apply the veratrine ointment, in the proportion of a scruple of the veratrine to an ounce of lard. A portion of this was to be rubbed in twice a day, and he was to take five grains of blue pill every night, with a draught containing five drachms of infusion of senna, five drachms of compound infusion of gentian, a drachm of tincture of senna, and a drachm of sulphate of magnesia every morning.

“On the 23d, having pursued this plan for about a week, he thought that he was a little better. A bad tooth was discovered in the upper jaw, which was extracted. The tongue was a little cleaner. He was directed to take infusion of rhubarb and columbo, of each six drachms, with a drachm of compound tincture of cardamoms, and half a scruple of carbonate of potass, three times daily. He was to go on taking the blue pill.”

On the 29th the report runs thus:—“He has improved rapidly: the pain is now very tolerable; the bowels are open twice daily; the tongue is nearly clean.”

On the 7th November it is said, “The pain, which had almost left him, returned with great severity two days ago. He has had no sleep since, in consequence of it. The tongue is again white and



furred. The medicine was not sufficient to act on the bowels, which have been confined for the last two days. He was directed to take five grains of blue pill every night, and a dose of compound infusion of senna with sulphate of magnesia every other morning."

On the 15th it is said that "he had been again relieved as soon as the bowels were well opened."

"On the 17th November I placed him on the following plan of treatment. He was to take five grains of blue pill, five grains of compound extract of colocynth, with three grains of extract of lettuce, every night. This medicine acted well on his bowels; he has been purged ever since he took it, two or three times daily. He has continued to take it up to the present time. The tongue is now quite clean. He is entirely free from anything that deserves the name of pain, although he has still some feeling of uneasiness in the face."

A violent pain in the face attacking the patient at intervals,—a pain so violent that the patient wishes that somebody would destroy him, and yet there being no disease perceptible in the parts to which the disease is referred: it is to a pain of this kind that we commonly apply the name of *tic douloureux*, or, as some call it, with more propriety, *facial neuralgia*. We must regard this case, then, as one of *tic douloureux*, or, if you please, *facial neuralgia*.

You will observe, that besides other classifications which you may make of the pains that occur in disease, you may divide them under these two heads. There are cases in which the pain is felt where the disease exists, as there may be inflammation in the knee, and pain in the knee in consequence; carcinoma in the breast, and pain in the breast in consequence; disease in the liver, and pain therefore in the hepatic region. Then there are other cases in which the pain is referred to parts which are not actually the seat of disease. Thus, there may be pain in the knee while the real disease is in the hip; there may be pain in the shoulder while the real disease is in the liver; there may be pain in the breast, while the real disease is an hysterical state of the constitution generally.

*Tic douloureux*, or *facial neuralgia*, belongs to this last class of pains. The pain which is felt is referred to some part or other of the face, or to the whole of one side of the face, and yet there is no disease there. You are not to suppose that the cause of the pain in this complaint is always the same: the fact is, the pain is but a symptom and it may depend upon different causes; so that in those patients who are said to be affected with *tic douloureux*, the real nature of the disease varies very much in different cases. You may have half a dozen persons with *tic douloureux* in the face, the symptoms in all of them being the same, or very nearly the same, and the real disease may be different in every one of them. The pain, as I have said, has the same character in all these cases, and it differs from the pain of most other nervous affections. You will observe that the branches of the fifth pair are all under particular anatomical circumstances; that they all proceed from that remarkable plexus which is bathed, as it were, in the blood of the cavernous sinus, and that the branches of it all run through

bony structures; the second and third branches especially being enveloped in bone to a great extent; and probably it is from one or other of these anatomical circumstances, or from both of them combined, that the pain derives its peculiar character.

The pain in all these cases, whatever may be the cause of it, generally comes on gradually. At first it is a pain which, though severe, may be borne; but at last it becomes quite intolerable,—so intense that the patient always says he would rather die than bear it. At first he complains of an odd twinge every now and then in the face; and it generally begins in the cheek where the second branch of the fifth pair of nerves is distributed. The twinge becomes more severe, and recurs more frequently. At first it recurs only two or three times daily, and lasts for an instant; then the twinge becomes more severe, of longer duration, recurring several times in the twenty-four hours; and so it goes on increasing. When the disease is at its height, the patient is in as wretched a condition as you can well imagine a human creature to be in. The pain attacks him every quarter or half hour, sometimes oftener, coming suddenly and unexpectedly on him at uncertain intervals. He states that at first there is a sensation of spasm, which is followed by a violent and continued pain, accompanied in some cases with a sense of pressure acting from above. You see the patient acting with all the muscles of the trunk, as if it were necessary that he should make this effort in order to support himself under a heavy weight that was forcing him to the ground. This will last perhaps for two or three minutes, and then the pain goes off, and he is quite well again till the attack returns. The recurrence of the pain is always readily induced by the patient's attention being directed to it. If you ask him how his face is to-day, the attack comes on directly; but if you hold him in earnest conversation upon any other subject, it may stay away for half an hour. The patient often cannot get to sleep on account of the pain; but having once fallen asleep, he may continue so without the pain recurring for several hours. I have known this to happen even in the very worst cases.

When the pain comes on there is often violent spasmodic contraction of the muscles of the face; and perhaps it is this which causes the face, on the side on which the disease exists, to become swollen and puffy. The conjunctiva of the eye on that side looks red and blood-shot. The pain, I say, generally begins in the cheek; and often it is altogether confined to the parts to which the second branch of the fifth pair of nerves is distributed; but in extreme cases it will sometimes extend to the forehead, that is, to the parts supplied by the first branch of the fifth pair of nerves; and to those supplied by the third branch of the fifth pair, that is, to the chin, and even to the teeth. In some cases the tongue and palate are affected also.

In some cases the disease torments the patient for a month, six weeks, or even six months, and then, without rhyme or reason, vanishes, and he continues well for an uncertain period: then it recurs, and continues as long or longer than before. In other cases the disease may vanish, not for a time, but altogether, the patient obtain-



ing a complete recovery. In other cases, again, there is never an actual giving way of the disease; it goes on tormenting the patient day after day, month after month, year after year; and in some of these cases other symptoms ultimately supervene, and the disease proves fatal. But of this I shall speak again hereafter. In addition to what I have already stated, it is worthy of notice that the disease attacks only one side of the face; I never saw it in both sides.

On what cause do these symptoms depend? Many persons thus affected have a bad tooth, and they generally go and get it drawn, it being thought that the carious tooth may be the cause of the pain. I never knew a case myself where the patient was relieved of genuine tic douloureux by the extraction of a carious tooth; and I remember that in a conversation which I had some years ago with a very experienced dentist, he told me that he had frequently been called upon to draw bad teeth where the patient had laboured under tic douloureux in the face; and he could not remember that the operation had ever been of any service. I have said that the disease may depend on different causes. Sir Henry Hallford has published a paper, in which he mentions some cases bearing all the character of genuine tic douloureux, in which the symptoms seemed to be connected with a diseased condition of the bones of the face; and I have no doubt that such is their origin in some instances. There was a man in this hospital suffering from a pain in the face and cheek, having all the characters which I have just endeavoured to describe, and in whom there was disease of the bone of the upper jaw. If I remember right, for I have preserved no notes of the case, he went through a course of sarsaparilla; a portion of the bone exfoliated, and after this the pain was very much relieved. I saw another case where there was pain very like that of tic douloureux existing in combination with disease in the bones of the upper jaw, but of which I know not the result. But these are rare instances. There is no diseased bone to account for the pain in ordinary cases. Then from what else may it arise? You will find it sometimes in young women of hysterical constitution, a product of hysteria. Where there is hysterical pain referred to the part in which the branches of the fifth pair are distributed, it assumes the form of tic douloureux. Then at other times the pain is intermittent and periodical, depending on that peculiar state of the system which may produce the phenomenon of ague, and may be cured as ague is cured, by quinine or arsenic. In other cases, again, the disease evidently depends upon the state of the digestive organs, and the patient is cured by great regularity as to diet, and a course of medicine which is calculated to put the digestive organs into a more healthy condition. In another order of cases the pain in the face is the result of disease in the brain. The late Dr. Pemberton, who was for many years physician to this hospital, and was engaged in a large practice at this end of the town, in the midst of his career of prosperity became affected with tic douloureux, and suffered from it in the most horrible manner. I never saw any individual, under any circumstances, suffer more. He went into the country, and died with symptoms of disease in the brain.

There was a gentleman who had tic douloureux in the face for a very long time. The pain at last left the face, and then he was attacked with fits of epilepsy. As the pain left the face when the patient became affected with epilepsy, that alone seemed to be sufficient ground for believing that there was some disease in the brain. After that, however, there was a ptosis, or a dropping down of the upper eyelid, on the same side on which the tic douloureux had existed. After a more than usually severe epileptic fit, he fell into a state of apoplexy, and died. Mr. Green, Mr. Freeman, and myself, who had attended him, examined the body after death. We found all the membranes of the brain bearing marks of chronic inflammation; the vessels connecting the *dura mater* and the bone unusually large; the *tunica arachnoides* thickened, and at the upper and back part of the left hemisphere of the cerebrum adhering to the inner surface of the *dura mater*, in a spot about an inch in diameter. The cerebrum generally was soft and vascular, exhibiting a red mottled appearance on many places. The softening of its substance was most distinct in the *crura cerebri*, *fornix*, and adjacent parts. The nerves of the fifth pair were carefully dissected to the extremity of the cavernous sinus, but presented no morbid appearances.

There are still other cases in which you cannot trace tic douloureux to its real source. There is something or other somewhere or other in the system, which acts as a source of irritation to the nerves of the face; but where that something is, and what it is, we cannot discover. Indeed, generally speaking, I should say that nothing is more difficult than to trace any local nervous affections to their real source. The disease may be in one part of the body, and the pain or spasm which it produces may be in another. I have known a patient have violent neuralgia of the foot, which depended on a stricture of the urethra, and which, whenever it occurred, was invariably relieved by the use of a bougie. I have known another patient have neuralgia of the foot depending on internal piles, which came on when the piles were protruded through the anus, and went away when they were reduced. I have known a spasmodic wry neck, or a nervous pain in the back, to alternate with insanity.

If it were worth while to do so, I might mention other cases illustrative of this observation, that the disease may be in one part of the body, and from some nervous connection, it may produce pain in some other part of the body. We cannot explain the matter much further than this. I may, however, venture to make this additional observation—namely, that there is good reason to believe that the seat of the nervous communication, on which those sympathies depend, is for the most part not in the nerves themselves, but in a higher place—in the brain, or in the spinal cord.

*Treatment.*—The treatment of *tic douloureux*, of course, must differ in different cases. In some instances it may be relieved by one method; in others, by another; but in the greatest number of cases it cannot be relieved at all. A very old operation, which had fallen into disuse, but has been revived of late years—namely, that of dividing the trunks of the nerves, to the extremities of which the pain



is referred. It has been said that if the pain be referred to the extremity of the second branch of the fifth pair of nerves, you should divide the second branch where it passes out of the infra-orbitary foramen on the face; that thus you will cut off the communication between the extremities of the nerve and the brain, so that the painful sensation may no longer be communicated to the sensorium. Now this would do very well if the seat of the disease were really in the extremity of the nerve: but there is no reason to believe that it is so, and there is every reason to believe the contrary.

The irritating cause, whatever it may be, manifestly acts not on the extremity of the nerve, but on its origin; and both reason and experience prove that the division of the nerves below the origin is of no service. I have myself performed this operation without the smallest benefit to the patient.

In the late Dr. Pemberton's case the branches of the nerves were divided by Sir Astley Cooper. Sir Astley did not recommend it, and, if my recollection be accurate, when Dr. Pemberton first applied to him to do it, he declined acceding to his wishes. He did it at last in order to satisfy the patient; but the division of the nerves, instead of giving relief, very much aggravated the evil. It is altogether an unscientific operation, from which we have no more right to expect any benefit than we should have if we were to amputate the testicle, because pain was referred to it in consequence of a calculus being lodged in the ureter.

In those cases in which the disease has an intermitting and periodical character, you can always relieve it, as you may all other cases of intermittent and periodical disease, by the exhibition of quinine, bark, and arsenic. But then, if you give quinine, it must be in large doses; you must begin with ten grains, and go on increasing it. I saw this very morning a gentleman who had formerly a nervous pain in the back, almost as bad as tic douloureux in the face. It was intermittent and periodical. I told him, when he consulted me about it, that I was sure that quinine would cure him. He took ten grains without benefit; he took twenty with little benefit: and was not cured till he took half a drachm daily. He remained well for two or three years afterwards. The combination of bark and arsenic, also, is an excellent remedy in these cases of intermittent and periodical disease; but I generally prefer giving quinine first, because it is a more innocent medicine, requiring no watching, and not subject to the inconveniences which belong to the use of arsenic.

I was consulted in conjunction with another practitioner, concerning a young lady who had tic douloureux of the face. She was hysterical, and the disease had followed the occurrence of some circumstances which had occasioned great agitation of mind. The case was evidently connected with hysteria and an irregular state of the menstruation. We gave her steel and ammonia in combination, which put her into better health, and in the course of a few weeks the tic douloureux, which had existed for many months, had disappeared.

If you can really trace the pain to disease in the bones of the face,

you must, of course, instead of directing your attention to the pain which is the symptom, endeavour to cure the disease in the bone which produces it. A piece of bone may exfoliate; and if the dead fragment has caused the pain by pressing or otherwise irritating the trunk of a nerve, the pain may thus be removed; or perhaps the patient may get well under the use of sarsaparilla, which, as you know, acts most beneficially in a number of cases of disease of the bones; or if sarsaparilla fail, you may serve your patient by the exhibition of calomel and opium, oxymuriate mercury, some preparation of iodine, or the mezereon; every one of which may in its turn be advantageously resorted to in cases of disease of the bones.

In cases where the pain depends on an organic disease of the brain, you must of course turn your attention to the primary affection, although it is probable that in the majority of these cases you will be able to render the patient but little real service.

But supposing that you can trace the disease to no other source, and that you find the tongue furred, the bowels confined, and other indications of an ill performance of the digestive functions, you have a right to conclude that this very probably is the origin of the pain in the face; at any rate you are called upon, in the first instance, to ascertain what will be the result of putting the digestive functions in better order. It was upon this principle that I proceeded in the case to which I called your attention in the beginning of the lecture; and you see that the practice has answered so far wonderfully well. As the bowels were opened, and the tongue became clean, so the pain abated. A great number of diseases depend on the state of the digestive organs. You will meet with examples of this every day; and there is nothing more remarkable in a patient having tic douloureux from a deranged state of the digestive organs, than there is in having sick headache in consequence of an overloaded stomach, or a lumbago from costive bowels.

But supposing that you cannot trace the disease to its real source—that the patient is in other respects well,—that all the functions are well performed,—that there is this frightful pain, and you have no clue to lead to the real seat of the original malady, and therefore no clue to the practice you ought to adopt,—you are driven to the expedient of trying remedies at hazard,—a very unsatisfactory mode of proceeding, it must be acknowledged, but you have no alternative. You may give the patient quinine, which is useful in many cases of nervous pain, even though it be neither intermittent nor periodical; or you may give carbonate of iron, which I do not hesitate to say relieves many neuralgic affections also. Half a drachm of the carbonate may be given three times a-day, and the dose may be gradually increased to a drachm. I never saw any good arise from pushing the use of the carbonate of iron beyond this; and I can easily conceive that much evil may arise from its being given in those enormous doses in which, if I am rightly informed, it is given by some practitioners. It is easy to conceive that when thus exhibited the bowels may be actually clogged by it, just as in other cases they are found clogged by cubebs or by Ward's paste. Whenever you



give these insoluble substances, you should give an occasional purgative to prevent the accumulation of an insoluble mass in the bowels. I heard of a patient who died of inflammation of the bowels in consequence of taking large doses of cubebs, which were not purged off. So I can conceive that inflammation of the bowels may be produced by the large doses of carbonate of iron being suffered to accumulate in the intestines.

If the quinine and carbonate of iron fail, it may then be worth while to try the effect of zinc or copper, or some of those other metallic salts which are occasionally useful in cases of chronic nervous affection.

But supposing that you have tried all ordinary means without benefit, are you to go on *ad infinitum* tormenting the patient with medicine? The first rule of our art is to do no harm; and if you have tried all reasonable expedients without benefit, you had better not go on to further experiments. No one can be dosed constantly with medicine without the health being injured by it, ultimately, if not immediately; and if you have not some reasonable grounds for giving medicine, you should not run the risk of doing harm by its continued exhibition. It is much more wise and honest, when you do not know what to do, to advise your patient to wait, and take the chance of the pain subsiding of itself, as it does in many instances. But where you cannot cure your patient, you may often succeed in making his life less intolerable than it would otherwise be. Some patients are capable of being much relieved by the use of opium, and among them there are a few with whom opium never disagrees, so that they may take it without harm. Even in these, however, it should be given only when the pain is more than usually severe. Let them avoid taking it constantly, because then the opium loses its effect. In slighter cases, the patient may perhaps be benefited by extr. of lettuce, extr. of henbane, or some other of the slighter narcotics. In all cases the patient is likely to derive advantage from avoiding as to diet, and mode of life in other respects, irregularities, including all unusual demands on the nervous system, great mental exertion and anxiety.

In the present case, one of the first things which I did was to direct that the part should be rubbed with the veratrine ointment. This has been lately proposed as a remedy possessing a most extraordinary influence over a number of diseases, neuralgic affections among the rest. I saw one patient who thought himself relieved by it of a pain in the forehead, connected with disease of the frontal bone in the neighbourhood of the frontal branch of the fifth pair of nerves. I was, however, by no means satisfied that the relief really arose from the use of the ointment; and in several other cases I have had recourse to it without the smallest advantage: however, there could be no objection to the use of it on this occasion, and I thought it worth while to make one experiment more—you have heard the result.

Although I employed the veratrine ointment in this instance, I am not one of those who would be trying indiscriminately all the new

remedies which, in these days, are being constantly brought before the public; nor can I think well of this modern fashion of resorting on all occasions to novel methods of treatment. I see many practitioners who would always rather give a new medicine than an old one, but I advise you if you wish to succeed in your profession and to be useful to the public, to pursue a different course. Make yourselves masters of the old remedies. Learn how to handle them, and what good they will do, and, as a general rule, have recourse to them in the first instance. If the old remedies fail, and you are at a stand-still, then, and not till then, have recourse to the new ones. If you always begin with new remedies, you throw away all the valuable results, not only of your own experience, but of the experience of those who have gone before you. You have to begin, as it were, *de novo*, and the first consequence of this will be that you will not cure your patients; and the second, that you will have none to cure. Where old remedies fail, I say that it is not only not unreasonable, but proper, that you should ascertain what can be done by new ones; but it is very unwise to employ the latter where there are sufficient grounds to believe that those already in use will answer the intended purpose. I should be very sorry to see the march of science impeded by an unjust apprehension of experiments and innovations: but, surely, there is a broad enough line between a discreet and prudent use of new remedies, and that indiscreet and hasty use of them which we find to prevail in the practice of the medical profession at present.

---

## LECTURE XXXIV.

### ON HEMORRHOIDS.

In the present lecture I purpose to make some observations on the disease which we call piles, or hemorrhoids.

A patient consults you, complaining of swelling, pain and tenderness, in the neighbourhood of the anus: you examine the part, and find on its verge a number of tumours, about the size of the end of the thumb or finger, with broad bases, not very distinct from, but running one into the other, covered by the common integuments, and of a more or less purple appearance. If you cut into one of these tumours there is immediately a flow of venous blood, followed by a small quantity of arterial blood, such as might arise from a cut anywhere else. On making a section of the tumour, it presents to the eye the appearance of dilated and tortuous veins: in fact you cannot doubt that they are dilated veins; they are exactly like varicose veins of the leg. The tumours which I have described are situated below the sphincter muscle, and we call them *external piles*.

Another patient consults you, complaining also of a swelling at



the anus, accompanied by pain and tenderness. You examine the part, and find a number of tumours of a different kind. These, too, have broad bases, and run one into the other, forming a circle, which projects below the anus. They are covered, not by the common integument, but by the mucous membrane of the rectum protruded from above the sphincter muscle. On making a section of one of these tumours there immediately flows venous blood, and arterial blood may flow afterwards. On looking at the divided surface, it is evident that the tumour was composed of a large tortuous vein. It is the accidental enlargement of these tumours which causes them to protrude externally; but they are formed above the sphincter muscles, and we call them internal piles, or hemorrhoids.

I cannot doubt that piles are just what I have mentioned—dilated varicose veins. This is the common theory of their formation, and I certainly believe it to be correct. If you cut through piles, and dissect them, as it were, in the living person, you see that they are made of dilated veins; and if you dissect piles in the dead body, you find them just the same. If you insert the pipe of a syringe into the trunk of the inferior mesenteric vein of a person who had laboured under piles, the piles become all dilated largely with the injection. I know that some have held a different opinion concerning the formation of these tumours, and have supposed that they were not composed of dilated veins: but I apprehend that they have been misled by examining the parts in the advanced stage of the disease. If you wish to know what any disease really is, you must make your dissection of it in its origin; for in its progress, one morbid change is followed by another, and when a disease has lasted for a considerable time, you find various appearances in addition to those which existed in the first instance.

Those ultimate changes which take place in cases of piles, are exactly similar to those which occur in connection with varicose veins of the leg. You know that at first the veins of the leg are simply varicose, or dilated; that at last they become inflamed; that lymph is deposited in the cellular membrane surrounding them, and that at last there is a great mass of induration, in which the diseased blood-vessels are, as it were, imbedded. So it is with the veins of the anus and rectum. At first they become simply dilated; repeated attacks of inflammation cause an effusion of lymph into the adjacent cellular texture, and then the pile appears like a solid tumour; in the centre of which, however, you still find the dilated vein in which the disease originated.

I have divided piles into internal and external; but, in fact, it is the same veins which are affected in both cases. The veins run on the inside of the sphincter muscle, and where the muscle compresses them there can be no dilatation of them; it is a bandage constantly operating to prevent the dilation in this particular part; but above and below the muscle the veins become dilated.

Whatever tends to obstruct the return of the blood from the inferior mesenteric vein will lay the foundation of piles. It is said that persons with diseased liver are liable to piles; and no doubt they

are likely to be so more than others, because the hard and indurated mass of a diseased liver interferes somewhat with the return of the blood from the abdominal viscera through the *vena portæ*. However, a great many persons have piles who have not diseased liver. The most common cause of piles is obstinate costiveness. Where the colon becomes loaded, and especially the sigmoid flexure, with hardened feces, there is a pressure on the trunk of the inferior mesenteric vein, which interrupts, in some degree, the return of blood from its branches. Women, during pregnancy, are liable to piles, the pressure of the gravid uterus producing the same effect as an accumulation of feces; and women who have borne children many times are liable to piles ever afterwards, the veins which have been repeatedly kept in a state of dilatation not becoming again permanently contracted afterwards. Piles are more frequent in the upper classes of society than in the lower. You know that in hospital practice you see comparatively few cases of piles, but out of it, I must say that they form a very large proportion of the cases that come under my care. The reason of this difference is to be found in the different mode of life in the various classes of society. The better classes take but little exercise, and they are more liable to constipated bowels than the lower classes, who take much exercise and live a great deal in the open air. There is a notion that those who take aloetic purgatives are more liable to piles than others; but I must acknowledge that I am not quite satisfied of the fact. I have a respect for all popular notions, believing that there is in general some truth at the bottom; and I will not say, as everybody thinks so, that aloe will not make people liable to piles, but I am sure they do not produce that effect to the extent that is supposed; and I could not be certain, from my own observation, that they are productive of it at all. The fact is, that those who are habitually taking aloetic purgatives are persons with costive bowels, who, as I have already mentioned, are just the individuals most liable to this disease.

The symptoms which are produced by piles differ accordingly as they are internal or external; and also according to the stage of the disease. In the origin of the disease, when the piles exist only in a slight degree, the patient complains of a sense of heat and itching about the anus; and every now and then, when he is costive, the external piles become a little swollen and tender; the internal piles become swollen, also, so as to fill up the cavity of the gut, thus exciting a sensation as though a stick, or some other foreign body, were lodged in it. The external piles sometimes inflame, swell, and become tender, so that the patient can scarcely bear them to be touched, and cannot walk without difficulty. They may continue thus inflamed for some considerable time, and then the inflammation may subside; the piles generally returning to the condition in which they were before the attack of inflammation came on, but not always.

Sometimes an abscess forms in one of these inflamed external piles, and bursts externally. The abscess may be troublesome to heal, but when it is healed it is found that the cavity of the vein is obliterated, and that it is, in fact, cured. Such an abscess as I have



just mentioned must be distinguished from a *fistula in ano*; from which, indeed, it is essentially different, as I shall explain more fully hereafter. Sometimes, when an external pile is inflamed, the blood in it becomes coagulated, and it is then hard to the touch. If under these circumstances you slit open the pile with a lancet, there comes out a mass of hard coagulum, perhaps as large as a pea or a horse bean; the cavity inflames, suppurates, and granulates; the same thing happens as though suppuration had taken place in the first instance, and the pile is obliterated. But if you do not slit open the pile, and leave the disease to take its own course, the cavity being blocked up by the coagulum, the vein becomes obliterated, after which the coagulum is gradually absorbed, and the pile is cured; that which was a pile before being now converted into a flap of skin. Just the same circumstance happens with varicose veins of the leg, where sometimes there is a natural cure, in consequence of the coagulation of blood in the dilated vessels. Sometimes, when a pile is thus distended with coagulated blood, the skin becomes so much attenuated that it gives way in some one point, and the blood being gradually squeezed out, suppuration probably takes place; and the case proceeds just the same as if you had opened the pile with a lancet. It is very common for external piles to undergo a process of natural cure in one or other of the ways which I have now described; and by examining the parts, you may ascertain whether these changes have taken place, as every one of them, after the cure is effected, becomes at last converted into a fold or flap of skin. Thus, if you see a patient with three or four loose folds of skin at the margin of the anus, you may know that these were formerly piles. At first these folds of skin are large, loose, and pendulous, but gradually they become contracted, till at last they give no sort of inconvenience to the patient.

Internal piles, as I have already told you, in slight cases produce heat and itching; and when inflamed, they give rise to a sensation as if there were some foreign body lodged in the rectum. Sometimes they are so much distended, that the gut is incapable of containing them, and they are pushed out through the anus, forming a tumour, which, while it projects externally, is still covered by the mucous membrane of the bowel. When internal piles are large, they always protrude when the patient goes to the water-closet, and afterwards go up spontaneously. If they be larger still, after going to the water-closet they will not return spontaneously, but the patient is under the necessity of pushing them back with his hand. If they be larger still, they come down at other times, especially when the patient is walking, so that he cannot well take any exercise. Sometimes you see one small internal pile permanently protruded, forming a red vascular tumour of the size of the extremity of your little finger. This is painful, and otherwise very troublesome to the patient, by keeping up a great and constant discharge of mucus. Sometimes there is a large protrusion of internal piles for several days, then they gradually become reduced in size, and go back into their proper place above the sphincter muscle. In short, with respect to the protrusion of internal piles, there are all possi-

ble varieties of circumstances: they may protrude occasionally, for a short time, or for a long period; they may be constantly protruded; or there may be a large protrusion at one time, and a small constant protrusion besides. Whenever the protrusion, be it large or small, takes place, there is an abundant secretion of mucus from the rectum; the piles themselves are sore to the touch; the surface is red and vascular; and if you put your hand upon them, you find that you can diminish their size by pressure, but the moment you take off the pressure, they are as large as ever.

In the state which I have now described, internal piles are not infrequently confounded with *prolapsus of the rectum*—nay, in general, patients, and even most medical men, describe the disease under this appellation; but the term is improperly employed. There is prolapsus of the rectum independently of piles: the disease may even originate in piles, and yet, when once established, it is entirely different from them. In a genuine case of prolapsus of the rectum, the gut itself comes down, sometimes several inches in length. When internal piles protrude, of course that portion of the mucous membrane of the bowels covering them is pushed down, because they could not come down without it; but you will easily understand that this is entirely a different matter from the whole length of the rectum, or even a large portion of it, coming down of itself. The distinction between these two diseases is very important, and you should be careful not to confound them together.

Internal piles, in the state which I have just described, give the patient a great deal of inconvenience; besides which, they are liable to irritate the neighbouring parts—sometimes producing the frequent desire to make water, at other times inducing spasm in the muscles which surround the membranous part of the urethra, so as to cause complete retention of urine. Internal piles in this state are liable to discharge a large quantity of blood; and hence it is that they have their name of *hemorrhoids*. You might suppose that the blood was venous, but it is arterial. Piles do not bleed in the early but in the advanced stage of the disease, when there is an increased determination of blood not only to the veins but to the mucous membrane and cellular texture by which they are surrounded.

The quantity of blood lost from internal piles varies in different cases: sometimes there is a little tinge of blood when the patient goes to the water-closet, and nothing more; at other times a large quantity is lost every time he goes there, so that as much as six or eight ounces are voided daily; and then there are the usual consequences of hemorrhage—the patient is weak, his countenance blanched, and his appetite voracious. I have known cases in which the patient was in danger of becoming dropsical, in consequence of the profuse loss of blood going on for a considerable time.

Inflammation sometimes takes place in internal piles, and ends in suppuration. The patient complains of a little discharge of matter from the anus, and you find, in addition to the mucus, that there is a little yellow stain of pus on his linen; and at first you would suppose there was a common abscess about the rectum, such as pro-



duces a *fistula in ano*. But if you introduce your finger into the rectum, you feel a small orifice in one of the internal piles, and if you pass a probe with a light hand, it goes to the bottom of the abscess, which is perhaps a quarter of inch in depth, or thereabout. The parietes of the abscess, however, are very thin and weak, easily broken down, and if the probe be not lightly introduced, it will run through them into the loose cellular texture external to the mucous membrane. The cellular texture also is very loose and yielding, offering scarcely any resistance to the probe, so that it will run in every direction; and hence it is that I have sometimes known a small abscess or internal pile to have been mistaken for a very long sinus. You ought to be very careful not to fall into this error, which you might easily do—nay, in all probability would do—in the first case of the kind that occurred to you, if I did not give you this caution.

I have mentioned that there is sometimes a natural cure of external piles; and I will now state how a natural cure of internal piles may take place also. Where piles of a large size protrude, completely filling up the orifice of the anus, the sphincter muscle is contracted upon them like a ligature, and causes them to become more swollen than when they were first protruded; just as a ligature on the arm makes the veins of the forearm and hand turgid previously to venesection. But the piles may be larger still; the sphincter muscle may contract more powerfully upon them; and then the pressure not only interferes with the return of the venous blood from the pile, but prevents the entrance of arterial blood into it. It acts as a ligature acts in a surgical operation—on a polypus of the uterus, for example. There is not a sufficient circulation in the protruded piles for them to retain their vitality; mortification takes place, sloughing follows, and thus the piles are destroyed. I have known several cases cured in this manner, and there is little or no danger in the process. I have sometimes known medical men to be alarmed at a case of this kind, confounding it with those of mortification from other causes; but the alarm is without foundation. The late Dr. Pearson, who was for a very long period of time physician to this hospital, was the physician of the celebrated Mr. Horne Tooke. Many years ago I was dining with Dr. Pearson, and after dinner he gave an account of Horne Tooke's illness. He said that he had long laboured under piles; that at last mortification had taken place; that there was no chance of his recovery; and he added, that he had that morning seen him for the last time. I remember that in the middle of this history there came a knock at the door, on which Dr. Pearson said, "Here is a messenger with an account of my poor friend's death." However, it was some other message; but by and by a messenger did arrive, saying that Horne Tooke was much the same, or a little better. It turned out, as I have been informed, that the piles sloughed off, and that from this time he never had any bad symptom. In fact, he was, if I have been rightly informed, cured of a disease which had been the misery of his life for many years preceding, and he lived for some years afterwards.

*Treatment.*—In considering the treatment of piles, we will first suppose that you are consulted when the disease is in its earliest stage. The patient complains of a sense of heat and itching about the anus, and perhaps there is already a slight protrusion of the piles. You may cure him, in general by a very simple process. Keep the bowels gently open; take care that he is not costive on the one hand or violently purged on the other. The best aperient for this case is the following:—One ounce and a half of *confectio sennæ*, half an ounce of *sulphur precipitatum*, and then *mel rosæ*, as much as is necessary to make an electuary, and let the patient take about a tea-spoonful, or what he finds necessary, of this, every evening. This is all that is wanted in many cases; but at the same time he should avoid drinking much wine; and if he be of sedentary habits, he should, if possible, alter them, and take exercise. If this should not relieve him, in addition to what I have just mentioned let him inject half a pint of cold water, fresh from the pump, as a lavement, every morning after breakfast, and keep it up as long as he can. This will give him immediate comfort, but it requires to be persevered in for many months; and perseverance in this plan of treatment will sometimes make a cure even of very bad cases of piles. You may, if you please, add something to make the water more astringent, as alum, the *tinctura ferri muriatis*, or the patient may use cold lime-water. A friend of mine, a practitioner at this end of the town, informed me that for many years he had used cold lime-water in cases of piles, with the best result; and I have employed it in several instances lately, in which I think it has been serviceable.

There is a medicine that is very often useful in those cases where these simple expedients fail, namely, the *confectio piperis composita*, which is similar to what was once very celebrated as Ward's paste. It is composed of black pepper, fennel seeds, elecampane, and honey: and the dose is a piece of the size of a nutmeg three times a day. It is like eating coarse gingerbread; it may be a little disagreeable to be taken, but still it may be taken easily enough; and the patient must persevere in its use for a considerable time. Very severe cases of piles are sometimes cured by it. A lady came to me with one of the worst cases of this disease that I ever saw: the piles were so large, and protruded so constantly, that I did not think there was any chance of curing her, except by the operation to be hereafter described, and I advised her to submit to it. She said the piles made her miserable, and she should be very glad to be cured on any terms; but she was compelled to pay a visit in the country, which would render it necessary to delay it for a month. I thought the delay for a month could not hurt her, and under these circumstances I recommended her to give Ward's paste a trial, and see what it would do for her. I heard nothing more of her for six or eight weeks, when she came back, and said she was happy to inform me that she had taken the paste regularly, and was now quite well. It is of no use to take this remedy for a week, a fortnight or a month; it must be persevered in for two, three, or four months.

How does the Ward's paste operate? I know a case in which



a patient, labouring under stricture of the rectum, had indiscreetly taken an immense quantity of Ward's paste, and in which the colon was found quite full of it after death. It is evident, that, except any small portion which may be digested, the Ward's paste passes into the colon, and that it must become blended with the feces; and I suspect that thus coming in contact with the piles, it acts upon them as a local application; much as *vinum opii* would act upon the vessels of the conjunctiva in chronic ophthalmia.

In confirmation of this view of the *modus operandi* of Ward's paste, I may mention an observation of the late Sir Everard Home. He had a patient labouring under piles, and he recommended him to take Ward's paste. The patient, little thinking that something put into the stomach was to cure disease in the rectum, crammed as much as he could bear of it up the rectum. I dare say it gave him a great deal of inconvenience, but, as Sir Everard Home reported, it cured him; and Sir Everard said that since then he had used it as a local application in some other cases, with manifest advantage.

I mentioned that a patient with stricture of the rectum had indiscreetly taken a large quantity of Ward's paste, and that the remains of it were found distending the colon after death. I recall your attention to this circumstance now, because it will serve to impress upon your minds the necessity of always giving the patient some gentle aperient occasionally at the time that the Ward's paste is being taken. This is not the only medicine of this description which may be used in cases of piles. Cubebs pepper, a scruple three times a day, may be given with advantage; it operates, I suppose, in the same manner as Ward's paste. In some cases of this disease, where there is a great deal of irritation, the patient will derive benefit from copaiva combined with caustic alkali; half a drachm of balsam of copaiva, with fifteen drops of *liquor potassæ*, may be rubbed down with two or three drachms of mucilage and cinnamon water, and taken three times a day. This answers a very good purpose, soothing the piles, and keeping the bowels gently open at the same time.

If you are called to a patient when the external piles are inflamed and swollen, your best way is to make him remain quiet in the horizontal posture, which takes the weight of the column of blood off the piles. You may, if you please, apply leeches in the neighbourhood, but not on the piles themselves, for the leech bites will cause them to become inflamed, and to fester; or, if the piles be much distended, you may puncture them with a needle. Acupuncture, on the whole, relieves the patient more than the application of leeches; and there are these advantages in it, that the puncture of the needle does not cause the piles to fester, and that the relief is immediate. By puncturing them in several places you let out a large quantity of venous blood, and the benefit arising from this is great. Besides this, you may keep a piece of rag constantly applied to the part, wetted with some cooling lotion; and the patient should take some gentle aperient, active purgatives being avoided.

When internal piles are inflamed, swollen, and protruded, you should try first of all to push them back into the gut. Take a cam-

bric handkerchief, or a soft old linen rag, squeeze out the blood from the piles, and if you can, return them into the bowel, it is so much the better; it will relieve the patient very considerably. But if you cannot push them up, or if, when pushed up, they immediately come down again, you should then keep the parts wet with a rag bathed with a cooling lotion, let the patient remain in the horizontal posture, and keep the bowels gently open, without purging. Here, also, as in the case of external piles, the patient will derive much benefit from acupuncture in several places. Punctures made with a needle, neither on this nor any other occasion, so far as I know, occasion inflammation or any other inconvenience; they evacuate the blood, relieve the tension and swelling, and do a great deal of good without any harm.

The observations which I have now made relate to the treatment of piles under ordinary circumstances. In more aggravated forms of the disease the patient must be relieved by other methods; but I must defer the consideration of the operation for piles till the next lecture.

---

## LECTURE XXXV.

ON HEMORRHOIDS, (*continued.*) ON PROLAPSUS OF THE RECTUM. ON EXCRESCENCES OF THE RECTUM.

DIFFERENT methods have been proposed for destroying hemorrhoids by operation: some surgeons have practised and recommended that by excision, while others have preferred the removal of them by ligature; others speak of the ill consequences attendant on each of these modes of operating.

It appears to me that the question respecting the operation and the proper rule of treatment has been very distinctly and correctly laid down by Sir Everard Home, in a paper on that subject, at the end of his work on Ulcers of the Legs. He states the matter thus:—That external piles which are covered by the skin ought not to be removed by ligature; if they are removed at all, it ought to be by excision. On the other hand, internal piles which are covered by the mucous membranes, ought, *for the most part*, to be removed by ligature. In short, the ligaturé is applicable generally in cases of internal piles, and excision to those which are external. The grounds of this distinction are as follow:—The application of a ligature to external piles gives the patient extraordinary pain at the time, and afterwards excites much inflammation, swelling, and disturbance of the general system; whereas, if they be removed by excision, these ill consequences are avoided. After the excision of *external* piles, there can be no danger of hemorrhage, because the parts are entirely within your reach, so that the bleeding vessels can be easily secured; and



though some little inflammation may supervene on the operation, yet it is not sufficient to be of any real consequence. If, however, you remove large *internal* piles by excision, there may be copious and even dangerous hemorrhage, since the parts which bleed are out of reach, above the sphincter muscle, where you cannot expose the cut surface, so as to be enabled to take up the bleeding vessel. On the other hand, the application of a ligature to internal piles in general causes but little pain, and only a slight degree of inflammation follows, for the mucous membrane has nothing like the sensibility of the skin, and does not resent an injury in the same manner. With respect to internal piles, then, there is no objection to the use of the ligature, while there is the greatest objection to their simple excision. This is the doctrine which I was taught by Sir Everard Home in this hospital when I was a student. But I met with a copy of Mr. Cline's Lectures on Surgery, in which he stated that he removed internal piles by excision; and this observation was added—"a timid surgeon removes them by ligature." Knowing Mr. Cline to be a very cautious practitioner, I thought that in what he recommended there could be no kind of danger, and for some time, therefore, I was led to follow his suggestion. In the first one or two cases I found no inconvenience to arise from my altered practice; but then a case occurred in which the patient lost a great deal of blood; in another case, the hemorrhage was so great that the patient nearly died; and then a third case occurred, in which also the patient lost an enormous quantity of blood—so much, that I now only wonder that he did not actually die. Since then I have never removed large internal piles except by ligature.

The removal of external piles is very seldom necessary: they are generally complicated with internal piles; and if you cure the former, the latter, which are a continuation of the same veins, will be cured also. However, there are cases in which it is right to remove external piles by excision. For example, where they are enlarged and inflamed, so that it will take a great deal of time to subdue the inflammation, and the patient is all the while suffering pain, he may be relieved at once by two or three snips of the curved knife-edged scissors. Or if an abscess has formed in an external pile, which bursts, discharges, and closes at the orifice, then bursts and discharges again, it may be worth while to cut off the pile and the abscess with it.

The excision of external piles is easily accomplished by means of the scissors which I have just mentioned. You take hold of the pile with a double tenaculum, elevate it a little from the base, and then snip it off. If there be a little artery bleeding considerably, you take up the vessel as you would on any other cut surface.

I have said that internal piles are to be removed principally by ligature. You will observe I do not say they are *never* to be removed otherwise. The fact is, that when internal piles are small, it is not worth while to tie them; and they may under these circumstances be excised with perfect safety. Such a case as this will frequently occur:—a patient complains of symptoms of internal piles; he has always pain about the anus, and a discharge of mucus. You examine the

parts, and find a pile, not larger than the end of your little finger, covered with the mucous membrane of the bowel, protruded, and, as it were, sticking in the orifice of the anus. You take hold of it with a double tenaculum, apply the scissors to the base, and no kind of inconvenience follows the operation. But whenever there are large internal piles, which protrude either constantly or occasionally, you ought not to venture to remove them except by ligature. In performing the operation by ligature, the first thing is to get the piles well protruded. For this purpose, you may make the patient sit over a pan of hot water, which will relax the sphincter muscle, and at the same time cause the veins of the rectum to become filled with blood. If this be not sufficient, let the patient have a pint or two of warm water thrown up as an enema; and when that comes away the piles will probably descend with it. The piles having been by these means brought properly into view, you may let the patient lean over a table, or lie on one side in bed, with his knees drawn up, the nates being held apart by an assistant. Each separate pile must be separately tied. If the pile be of a very small size, you may just take it up with a double tenaculum, draw it out, and tie a ligature round its base. But if the piles be of a large size, you should proceed in the following manner: have a large curved needle, armed with a strong double ligature; pass the needle, carrying the ligature after it, through the base of one of the piles, and then cut off the needle. The double ligature is now divided into two single ligatures, which are tied round the base of the pile, one on one side and the other on the other side, with a single knot. Treat all the piles in this manner; and as the ligatures are applied, let your assistant draw the several threads out of your way, holding them over the nates. When each of the piles is secured in this manner (and there may be two, three, four, or five, to be thus treated), you then proceed to another step of the operation: cut off the convex portion of each pile, so as to make an opening into the cavity of the convoluted vein which forms it. Thus you take off the tension produced in the pile by the blood which it contains, and are enabled to draw the ligature tighter than before. It should be drawn as tight as possible. As the ligature is tighter, so there is less pain afterwards; so also the slough separates sooner, and the more expeditious is the cure. You have now only to complete the double knot upon each of the ligatures, and cut off the threads close to the knots, returning the piles, ligatures and all, into the rectum. It is a very simple operation; and except when the piles are in a state of inflammation, attended with but little suffering. You are to take care, in performing it, to keep all the ligatures clear of the external parts; for if they include any of the skin, the patient suffers a great deal of pain, and much inflammation will supervene. I generally give a pretty active dose of rhubarb the day before the operation, so that the bowels may be well emptied, and that the patient may afford to go for two or three days after the operation without having an evacuation.

It very seldom happens that inflammation or fever follows the use of the ligature, and the threads generally separate at the end of a



week,—not that I look for their separation, for it is of no consequence whether they come away a day sooner or a day later. I never trouble my head about the ligatures after they have been once applied; but if you choose to look for them, this is the time at which you will find that they usually come away.

But the patient must now take measures to prevent a recurrence of the disease. For this purpose, when there has been time for the sores left after the separation of the ligatures to have healed, I recommend him to take some lenitive electuary and sulphur every night, so as to keep the bowels gently open, and to use a lavement of cold water every morning.

I conceive that this is not only one of the most effectual, but one of the safest operations in surgery. I should think I must have performed, or seen it performed, between 200 and 300 times. I saw one patient who died after the operation, in consequence of diffuse inflammation of the cellular membrane running up on the outside the gut as high as the mesentery; but that was a patient whose constitution was broken down by long-continued hemorrhage, and in whom any slight accident might have produced equally bad consequences. I saw another patient, who, a week after the operation, and having been quite well in the interval, had an attack of pain in the abdomen, and shivering attended with fever, and died. I was not allowed to examine the body after death. I could not make out at the time that the symptoms had any connection with the operation, nor do I believe that they had; but I mention the case because, as the body was not examined after death, I have no certain knowledge on the subject.

With the exception of these two cases, out of all the 200 or 300 patients whom I have known treated in this manner, I never knew any ill consequences to arise. I contend, then, that the operation is as safe as any operation can be expected to be. You are not to suppose that even the slightest operations in surgery are absolutely, in all cases, free from every particle of danger, any more than the slightest accident. I have known two patients die after the extraction of a tooth, and I have known several die in consequence of venesection at the arm, or an accidental prick of a finger. The chance of danger from this operation at any rate is so trifling that you need not calculate upon it. If you were to calculate upon so small a chance as this, you would scarcely be able to do anything in the common affairs of life.

Supposing a person has piles which come down when he walks, which are constantly teasing him in this way, and yet he cannot make up his mind to submit to an operation, or that there are any circumstances that lead you to think it better not to have recourse to it, still you may do something for his relief. There is a machine made for the purpose of supporting the bowel, and preventing the protrusion of the piles. It is sold under the name of a truss for the *prolapsus ani*, the makers of it confounding, as I have told you is often done even by surgeons, internal piles with prolapsus of the rectum. It is made with a spring which fits round the pelvis, and so far resembles a spring truss for a hernia; but at the back part, fixed at right angles

to the circular spring, there is another spring which descends behind the sacrum, taking the course of that bone, and terminating below in a pad, which rests on the anus. The elasticity of the spring supports the pad, keeps it pressed against the anus, and prevents the protrusion of the internal piles.

#### PROLAPSUS OF THE RECTUM.

I have just observed, that it is very common to confound *prolapsus of the rectum* with internal piles. This error is committed not only in common conversation, but by surgical writers; and hence it is that no good account, so far as I know, has ever been published of the first-mentioned disease. But the difference between internal piles and real prolapsus of the rectum is this: in the protrusion of the former, the mucous membrane covering them descends, and may be seen below the anus; but it is only the mucous membrane; there is no descent of the muscular tunics; whereas, in the latter, the whole of the rectum comes down, and sometimes as much as twelve inches in length. I have never dissected a case of prolapsus of the rectum; but it is impossible to examine a genuine instance of this displacement in the living person without being satisfied that the muscular tunic is protruded, as well as the mucous membrane. There being such a marked difference between prolapsus of the rectum and internal piles, nothing can be more absurd, or unscientific, than to confound these two diseases with each other.

It is not remarkable that the whole of the tunics of the rectum should sometimes protrude in this way. Look at what happens to the bowel above. Do you not find one portion of it slipping into another in the case of intro-susception? and prolapsus of the rectum is just the same thing. If one portion of bowel slips into another, why should not the rectum slip out at the anus?

Prolapsus of the rectum occurs most frequently in children, and especially in those with large tumid bellies and costive bowels, where the whole mass of the intestine becomes too large for the cavity which contains it. Simple dissection will inform you why children are more liable to this disease than grown-up persons; it is because the prostate gland, urethra, vesiculæ seminales, and all these parts, are not so much developed as in the adult. The attachment of the rectum to the surrounding parts does not extend so high in children as in persons of mature age, while the reflection of the peritoneum takes place lower down, and hence the rectum is more liable to be pushed out.

In adults prolapsus of the rectum sometimes occurs as a consequence of piles. The patient having been liable to the protrusion of internal piles, and the sphincter muscle having been thus continually dilated, the rectum is more liable to slip out, as you may well suppose, than it would be if this dilatation had not taken place. However, in grown-up persons the disease is comparatively rare. I see it every now and then, but very seldom; and where you meet with it in the adult, it has generally begun in early life.



When prolapsus of the rectum is combined with internal piles, you will see the latter at the upper part of the prolapsus—that is, close to the orifice of the anus, forming a zone around the gut; and the colour and appearance of the mucous membrane covering the protruded piles are altogether different from that of the membrane covering the rest of the gut.

The inconvenience which the patient suffers from prolapsus of the rectum varies very much in different cases. Sometimes it comes down occasionally after a costive motion only, and is easily pushed up; and when pushed up it remains in its place till some accidental circumstance brings it down again. In other cases you return it, but the moment the patient begins to walk about, down it comes again; and in instances of long standing, the bowel becomes so fixed in its unnatural position, that you cannot return it by any means, and then other inconveniences follow. The rectum having been constantly protruded, becomes inflamed from friction, ulcerated, sore, tender, painful; and where the protrusion has existed for a long time, you will find it covered by a kind of cuticle.

*Treatment.*—When you are called to a child labouring under prolapsus of the rectum—and these are the cases that you most frequently meet with—you will almost invariably relieve him in the following manner:—Purge him with calomel and rhubarb occasionally; be very careful about his diet, that he does not eat a great quantity of vegetable substance, which tends to fill up the cavity of the bowel, while it affords but little nourishment; and every morning let some astringent injection be thrown up. The injection which I have generally used is a drachm of tinct. ferri muriatis, in a pint of water; and two or three ounces, or more, of this, according to the age of the patient, may be injected into the rectum every morning, the child being made to retain it as long as possible. I never saw a case of prolapsus of the rectum in a child, which was not cured in this manner.

If you are consulted about an adult labouring under this disease, and it has been consequent on a protrusion of piles, the first thing to be done is to destroy the piles. Let the patient sit over a pan of hot water, and the sphincter muscle being relaxed and the parts distended with blood, the piles and rectum will all protrude together: you must then tie the piles, which you can easily do, your assistant holding the rectum on one side, while you apply the needles and ligatures on the other. Having tied the piles, you return the rectum into its proper place; and you will probably find, that in curing the piles you have also remedied the prolapsus of the bowel. But if the patient neglects himself afterwards, as the piles return so the prolapsus returns with them.

Where the disease is not complicated with piles, in those cases which occur occasionally in which prolapsus of the rectum has begun in early life, and has continued to adult age, the cure is very difficult and perhaps impossible. The patient must be retained in the horizontal posture, for then the rectum is much less likely to protrude than when he sits up: he ought not to sit up even for an evacuation,

but should have a bed-pan. Whenever the rectum protrudes, it should be pushed up again; an astringent injection should be employed daily, and the patient should be put through a course of Ward's paste. This plan affords him the best chance of a cure which he can have, but I will not say that it will always be successful. I remember trying it for a great length of time in a woman in the hospital, and, after lying many weeks in bed, when she got up the rectum came down as before; nay, it came down sometimes when she was in bed, even in the horizontal posture. In these cases, however, you may employ with advantage the truss for prolapsus of the rectum, which I mentioned as applicable chiefly to bad cases of internal piles. There was a patient in the hospital (a soldier) who had, I suppose, eight or ten inches of the rectum constantly protruded, and it could not be returned. After trying various means for a length of time, he left the hospital as bad as when he came in, and I do not know what became of him. It occurred to me afterwards, that in such a case as this it might be advisable to apply ligatures, and then cut off the protruded gut; for though the disease is not immediately dangerous, yet it must be regarded as ultimately so; and it might be worth while for the patient to run some risk at the time, for the chance of subsequent cure. I do not know that such an operation has ever been performed; but is it not deserving of consideration whether we ought not to have recourse to it in certain cases? There is a natural cure of bad cases of intro-susception, the analogy of which is in favour of the practice which I have just suggested. In the cases to which I allude, one portion of gut being protruded into another, the protruded portion is constricted by the edge of that into which it has passed; the circulation in it is stopped, and it sloughs away as if a ligature had been put round it. In this manner a portion of gut, eight or ten inches in length, has sometimes come away, and the patient has lived and done well afterwards. Several cases of this kind are on record; and I once had an opportunity of dissecting a patient who died when the sloughing process was taking place. If such an operation as I have proposed were to be had recourse to, the gut must be included in several ligatures, so that the orifice of it may not be obstructed, as it would be by a single one.

#### EXCRESCENCES OF THE RECTUM.

Excrescences of various kinds take place on the inner surface of the rectum, which patients are very apt to mistake for piles. Here is one [presenting a specimen]—a sort of polypus. It is, as you see, of a small size, but I have seen them as large as the finger. It seems to be of the same structure as the polypus of the uterus. This kind of excrescence is by no means uncommon. Sometimes there is a single one; at other times there are two or three growing from the mucous membrane. In some instances they occasion the patient scarcely any inconvenience, while in others they give rise to the most extraordinary suffering. What is it that makes this difference? The



patient suffers in those cases in which the excrescence comes down when the bowels act, and gets pinched by the sphincter muscles. Under these circumstances it is liable to become ulcerated, and then the pressure of the sphincter and always induces excessive pain, which continues not only till the excrescence recedes, but for some time afterwards. A lady sent to me, complaining of what she called very bad piles. On examining the rectum, I discovered a little polypous excrescence, in a state of ulceration, sticking in the sphincter muscle. I took hold of it with a pair of forceps, and snipped it off with the scissors. She felt hardly any inconvenience from the operation, but, to her surprise, though she had been enduring a great deal of pain, and had been miserable for months, from this moment she was well. A lady, not long since, came to my house, from a distance in the country, in whom most severe sufferings were occasioned by one of these polypi being ulcerated and entangled in the sphincter muscle. I immediately snipped it off; she was completely relieved; went home, I believe, on the same day, and I have no doubt has been quite well ever since.

Excrescences of the rectum sometimes take place, of a large size, which are not of a malignant nature, such as you see here [exhibiting a preparation]. This I removed from an old lady, 80 years of age. She sent to me, complaining of pain about the rectum, and hemorrhage. I thought there were probably internal piles, and that it was not worth her while, at so advanced an age, to go through any operation, and I prescribed her some trifling medicine. She sent to me again, to say that she had lost a great deal of blood, and could not pass an evacuation from the rectum without the greatest difficulty. I introduced my finger and found a large excrescence, of which this specimen is only a portion. It seemed to be a matter of necessity that something should be done for the patient's relief: I therefore introduced my fingers into the rectum, gradually dilated the sphincter muscle, took hold of the excrescence, pulled it down, tied a ligature round its neck, and then snipped it off below the ligature. No harm followed the operation; the patient was perfectly relieved, and lived some two or three years afterwards. I believe the excrescence returned before death, but still she suffered no inconvenience from it.

These excrescences [presenting a fourth preparation] were, I believe, originally external piles, and they are not very uncommon. I mentioned in the last lecture, that when the cavities of external piles become obliterated, they generally form flaps of skin, which gradually waste; but sometimes diseased action takes place in them, and they become converted into excrescences similar to those which grow from the nymphæ of women. They are generally connected with dirty habits: the parts get irritated by the dirt; and so the piles become converted into these excrescences, into which they would not be converted in a more cleanly person.

## LECTURE XXXVI.

ON PRETERNATURAL CONTRACTION OF THE SPHINCTER ANI. ON  
ULCER ON THE INSIDE OF THE RECTUM. ON STRICTURE OF THE  
RECTUM.

THE orifice of the anus, as you know, is closed by the sphincter muscle. The ordinary condition of this muscle is that of being contracted, and thus it prevents the involuntary discharge of feces from the rectum. In the expulsion of the alvine evacuations, the effort of the abdominal muscles and diaphragm is always attended with a relaxation of the sphincter muscle, in consequence of which the contents of the bowels are allowed readily to escape. If this consent and sympathy between these different muscles did not exist—the whole of them being in a state of contraction at the same time—the feces would be expelled with very great difficulty and distress to the patient, or not at all. Now it happens that this state of things sometimes actually exists, and the result is precisely what I have mentioned. The contraction of the sphincter at first appears to be merely spasmodic, without any other change of its condition; but you know, that in proportion as muscles are called into greater action, so they become increased in bulk; and, in conformity with this general rule, when spasmodic contraction of the sphincter muscle has existed for a long time, the muscle becomes considerably larger than it was in its natural state before the disease existed.

This disease is not of uncommon occurrence. It is met with chiefly in women, especially those who are disposed to hysteria. It is, however, met with in other women, and sometimes in the male sex.

The patient, under these circumstances, is forced to strain very much in passing her evacuations; and this is especially the case when the feces are hard, or even solid. There is pain not only when the feces are being passed, but for a very considerable length of time afterwards; and in some cases the pain will remain from the period of one alvine evacuation to that of another; so that it is constant, or nearly so. It is remarkable what misery some persons suffer under the circumstances which I have just described.

In connection with spasmodic contraction of the sphincter muscle, you will frequently find a small ulcer of the mucous membrane of the rectum. This ulcer is always in a particular spot, at the posterior part, opposite to the point of the os coccygis. I imagine that it arises from the mucous membrane there being torn by the pressure of the hard feces, at the time that the evacuation is labouring, as it were, to get through the contracted orifice of the anus. Such an ulcer as I have just described adds very much to the patient's sufferings; it is always excessively sensitive; the least pressure of the finger upon it



occasions the patient the greatest pain, and the pressure of solid feces produces the same effect.

An ulcer of this kind is met with in some cases independently of disease of the sphincter muscle ; but to that I shall advert hereafter.

*Treatment.*—When the patient does not suffer excessively from this disease, you may sometimes relieve her in the following manner:—Give her purgative medicine, so that she may never have hard or figured evacuations, and let an opiate suppository be introduced at night. I have formerly used a suppository with extract of belladonna, with manifest advantage ; but I own that I am not in the habit of frequently employing this remedy. Even used in the form of a suppository, the belladonna sometimes produces very serious symptoms, by its influence on the brain. In addition to what I have mentioned, the patient may introduce a bougie into the anus, to dilate the orifice of the bowel, each time before she goes to the water-closet.

These remedies, however, are of no avail in bad cases of this disease ; and then it is absolutely necessary to resort to some more certain means of cure. It may always be relieved by a simple operation—the division of the sphincter ani muscle. You introduce a straight probe-pointed bistoury into the anus, and cut through the fibres of the muscle, taking care not to penetrate beyond them. The fibres are of considerable thickness, and you cannot cut them through at one incision, nor should you attempt it ; the knife must be drawn across the muscle two or three times before the operation is completed. It is generally sufficient if you divide the muscle on one side. It is better to divide it laterally than either in the posterior or anterior direction. The wound does not readily heal if the division be made towards either the perineum or the os coccygis ; nay, more than that, if in the female you divide the muscle towards the perineum, and consequently towards the vagina, you make the patient miserable for life, for there is incontinence of feces ever afterwards ; whereas, if you divide it in any other direction, this inconvenience is altogether avoided after the wound is healed.

The operation of dividing the sphincter muscle is not very painful, except in those cases where the disease is complicated with ulcer at the back part of the rectum ; neither is there ever any hemorrhage of consequence, as the pressure of the finger, or a plug of lint, will always command it. The relief is immediate ; and the very next time that the patient has an evacuation, there is an end of all the pain and difficulty which she suffered before. It is better, however, that she should not have an evacuation immediately after the operation, and therefore I generally give her an active purgative on the preceding day, and some opium afterwards to keep the bowels constipated. After two or three days castor oil may be exhibited, and the bowels opened. The wound requires very simple treatment ; a little dressing of lint may be applied to it till it is cicatrized ; and cicatrization is generally completed in about three weeks.

No inconvenience whatever follows the division of the sphincter muscle, except it be made, as I have mentioned, in the female, in

the direction forwards. The patient retains her feces as well as ever, and yet the difficulty of voiding them is relieved. All the symptoms, so far as I have seen, are permanently removed. I have performed this operation of dividing the sphincter muscle for this disease, and in other cases, a great many times; and I have been accustomed to say that it is an operation free from danger; but, after all, there is no operation in surgery, not even the slightest, of which we can assert this as a general proposition, or as one to which there are absolutely no exceptions. The utmost that we can venture to say is, that the probability of any bad result is so small, that we ought not to calculate on it; and that if we were to calculate on such chances in the common affairs of life, we should do nothing. I have known two instances of persons dying after the extraction of a tooth; I have known others die in consequence of being bled in the arm, or of erysipelas occurring after being cupped. I have known the bite of a leech, and the sting of a wasp, and the prick of a pin, to prove fatal; and I have lately had the misfortune of losing a patient after the division of the sphincter ani muscle. The case occurred in a lady of a peculiarly susceptible nervous system. Immediately after the operation she fell into what might be called a state of hysterical syncope, from which she did not recover until after the lapse of three or four hours. She died at the end of a week, with inflammation of the pleuræ and peritoneum, which had caused a very large effusion of turbid serum into the cavities of the chest, and a smaller effusion into that of the abdomen also. There was no inflammation of the rectum, nor of the cellular membrane or other textures in immediate connection with it; and it was evident that the pleuritic and peritoneal inflammation had not extended from the part on which the operation had been performed, but that it had been the result of the impression made on the system generally. I cannot so well compare the case to anything, as to one of puerperal fever.

#### ULCER ON THE INSIDE OF THE RECTUM.

The ulcer which occurs in connection with a contracted sphincter muscle, in some instances exists independently of it. You may discover it on the posterior part of the rectum, opposite to the point of the os coccygis; and, as I have already stated, it occurs, for the most part, in persons who have costive bowels and hard stools, the mucous membrane being under these circumstances lacerated by the pressure of hard evacuations. When once produced, the ulcer is very difficult to heal, and very frequently it goes on spreading till it becomes of considerable size. It is a superficial ulcer, of exquisite sensibility, and great pain is always produced by the passage of the feces over it, lasting for a considerable time after each evacuation. In some instances, considerable hemorrhage takes place from an ulcer of this kind.

*Treatment.*—The ulcer is always cured by a division of the sphincter muscle. This, however, is not always necessary, unless



the muscle be actually contracted. Mr. Copeland has observed, that when there is a simple ulcer, the mere setting of the mucous membrane at liberty, by dividing it longitudinally, so as to include the ulcer in the incision, is sufficient to effect a cure. I have known this to succeed in several instances, and I believe that it is Mr. Copeland's ordinary practice. However, a cure may be obtained, in many instances, without an operation of any kind, by means of the conf. piperis compos., or Ward's paste, given internally (the bowels being at the same time kept gently open by the use of lenitive electuary and sulphur, or some other simple aperient). Ward's paste may be applied locally also. I had a case, not long since, in which the patient was unwilling to submit to the division of the mucous membrane, and where she got well under the use of suppositories of Ward's paste and soap. A piece of this, blended with soap, was introduced into the rectum twice a-day, gentle aperients being exhibited at the same time, so as to prevent her having hard evacuations.

## STRICTURE OF THE RECTUM.

Under the appellation "stricture of the rectum," various diseases have been confounded with each other—some malignant, and some not malignant; but I am going to speak now of that stricture or contraction of the gut which does not partake of a malignant character. Malignant diseases of this organ will be considered in another lecture.

Here is a specimen [presenting it] of stricture of the rectum. On dissecting a case of simple stricture of the rectum, I have found the mucous membrane thickened, of a harder structure than natural, and the muscular tunic thickened also. The stricture sometimes occupies the whole length of the gut, for some way up above the anus—perhaps three or four inches, as in the specimen just shown you; at other times it is only of short extent. Frequently the gut is of its natural diameter close to the anus, and about an inch and a half or two inches above it there is a circular contraction, and then above that the gut is of its natural diameter again. Although the contraction may occupy only a small portion of the length of the rectum, yet the disease of the tunics is generally more extensive. Thus, if there be a contraction of the gut two inches above the anus, you find the mucous membrane between the stricture and the anus thickened, and in an unhealthy state; and on passing the finger through the stricture into that portion of the gut above it, you will find the mucous membrane in this situation in an unhealthy state also.

The disease occurs in either sex: in adult persons more than in children. It comes on gradually. The patient finds a little difficulty in passing the evacuations; then the difficulty becomes greater; he is forced to strain when at the water-closet, especially if the feces be hard; and at the same time the feces are observed to be of a very

small diameter. The constant straining against the stricture causes the diseased part to become inflamed, and then the evacuation is attended with a great deal of pain, there being also a discharge of mucus constantly dribbling from the anus, and staining the patient's linen of a brown colour. As the disease advances, some parts of the mucous membrane ulcerate. This causes the pain to be much aggravated, there being then a discharge not only of mucus, but of blood and pus from the anus. If the disease proceeds still farther, inflammation takes place in the cellular membrane around the gut; putrid abscesses form, which burst in various situations at every side of the anus, into the urethra in men, and occasionally in women into the vagina. These abscesses are probably formed in the following manner:—ulceration takes place of the mucous membrane, and of the muscular tunic of the gut, in consequence of which a very small communication is formed between the cavity of the rectum and the cellular membrane in the neighbourhood; then some small portion of the contents of the bowel escapes into the cellular membrane, inducing inflammation and suppuration, the admixture of a little feculent matter causing the contents of the abscess to be putrid. In some instances the patient dies with symptoms of strangulated hernia—that is, a piece of hard feces is lodged above the stricture, and cannot pass through it; thus there is a mechanical obstruction to the passage of the feces; the belly becomes tympanitic, the tongue dry; there is sickness, vomiting, and the other symptoms indicating strangulation. He may have one of these attacks, and, by means of injections and the use of the bougie, may recover; he may have a second, and recover from that; and then he may have a third, which may prove fatal. In the most advanced stage of this disease, independently of these attacks, the patient suffers much in his general health, loses flesh, perspires at night, his digestion is deranged, he is emaciated and hectic, and thus gradually becomes exhausted.

The progress of the disease, which I have thus described in a few words, is, however, lingering and tedious. The patient may die, even where no remedies are employed, after ten or twelve years of inconvenience first, and of suffering afterwards. In some cases, under a judicious treatment, although the disease cannot be cured, it may be much mitigated, and may never prove fatal.

*Treatment.*—When you are called to a patient with stricture of the rectum, you should first make an examination with the finger, so as to ascertain exactly where the stricture is situated, how high up it extends, and how much of the gut is included in it. If the stricture be not in a very irritable and tender state, the patient may at once derive benefit from mechanical dilatation by the use of a bougie. You will ascertain the diameter of the stricture with the finger as nearly as you can do so, and introduce a bougie, of proper size, through its orifice. The bougie must be allowed to remain in the stricture five or ten minutes, or in some cases for a longer time; and the operation must be repeated every day, or every other day, according to circumstances. In this manner you will gradually be enabled, in the early stage of the disease—I will not say to restore



the gut to its natural diameter—but to dilate the stricture so much that the evacuations may be readily discharged, and that the patient may suffer but little inconvenience from it. I saw not long since a lady, respecting whom I had been consulted about three or four years previously. At that time the stricture was so great, that I could introduce only a small urethra bougie. I directed her to commence a course of bougies, which her medical attendant introduced for her. They were very gradually increased in size; and when I last saw her the stricture would admit one of very large diameter; and she experienced no more than the slightest inconvenience from the complaint. Here, as in cases of stricture of the urethra, the use of the bougie must be continued. If it be neglected, the stricture will return and be worse than ever.

In some cases of this disease you may facilitate the process of cure in the following manner. In the cases to which I allude, the stricture is situated about two inches above the anus, and occupies only a small portion of the length of the gut. It forms a circular band, embracing the finger, as narrow as a cord. A stricture of this kind may be divided in two or three parts of its diameter, before you begin the use of the bougie, in the following manner:—Introduce a *bistouri caché*, and let the screw be so adjusted that the blade may be opened about the sixth of an inch, but certainly not more than a quarter of an inch. The *bistouri* must be introduced with the blade shut; then press on the handle, open the blade, and, drawing it out, you nick the stricture first in one part of its diameter, then in another, and then in a third. This being done, a larger bougie may be introduced than could be done before, and the process of cure is very much expedited.

But in a great number of cases where the disease is far advanced (and, generally speaking, you are not consulted till that is the case, especially in hospital practice), you cannot resort to the use of the bougie in the first instance, or, if you do, it must be employed in combination with other remedies. It will be necessary to lessen the irritability of the bowel by the introduction of an opiate suppository every night, a gentle aperient being taken in the morning. The patient may take a combination of caustic potass with balsam of copaivi; half a drachm of balsam of copaivi, fifteen minims of the *liq. potassæ*, three drachms of mucil. gum arabic, and about nine drachms of caraway water. A draught of this composition may be taken three times a day with very great advantage. Mr. Bryant, a respectable practitioner in the Edgeware Road, two or three years ago recommended to me a decoction of *achillea millefolium*, which I have employed in some of these cases with manifest advantage. About two ounces of the *achillea millefolium* may be put into a pint and a half of water. This may be boiled down to a pint, of which a patient may take a wine-glass three times a day. The *achillea millefolium* is sold at the herb shops in Covent Garden; it is not in the Pharmacopœia, although it has been always a popular remedy.

Where abscesses have formed in the neighbourhood of the gut, it is of no service to lay them open. I have told you on many occa-

sions, that if abscesses are connected with diseased structure, they are not likely to heal; and you only make the patient worse by laying them open, there being, of course, a much greater extent of raw surface after the operation than before. If these abscesses are to be healed at all, it can only be after the stricture has been fully dilated.

In some cases the feces accumulate above the stricture, the bowel in this situation becoming distended into a large bag, forming an immense reservoir of feculent matter, always pressing against the stricture, and aggravating the disease. It is very important to empty the bowel which is thus loaded; and you can only do it in the following manner:—Introduce an elastic gum catheter through the stricture into the feculent mass above; inject tepid water, or tepid soap and water, or a weak solution of caustic alkali; and by repeating this operation, and washing out the gut with warm water every day, or every other day, you may at last get the whole of the feculent accumulation dissolved, and empty the reservoir. When this has been accomplished, the injection of warm water should be constantly repeated, so as to prevent the accumulation taking place again.

In some cases of stricture of the rectum, I have thought that the patient has derived benefit from the application of mercurial ointment to the inside of the gut, which is easily managed in the following manner:—Let the bougie be covered with lint smeared with mercurial ointment: the bougie thus anointed must be allowed to remain in the stricture for a few minutes daily.

Your success in the management of this disease will vary very much in different cases. It will depend chiefly on the period of the disease at which you are consulted. If it be quite in the early stage, you may render the patient great service; and although you cannot cure stricture of the rectum any more than you can cure stricture of the urethra, yet you can dilate it, and keep it dilated, so that the patient will suffer little from it, and that it will not shorten his life. But if you are consulted in the advanced stage, when the stricture is much contracted, when the mucous membrane is ulcerated, when abscesses have formed in the neighbourhood, you can only palliate the symptoms in some degree. The patient, under these circumstances, in spite of all your efforts, will lead a miserable life, and in all probability will ultimately fall a victim to the disease.

Strictures of the rectum are commonly situated in the lower part of the gut, within the reach of the finger. Are they ever situated higher up? I saw one case where stricture of the rectum was about six inches above the anus; I saw another case where there was stricture in the sigmoid flexure of the colon, and manifestly the consequence of a contracted cicatrix of an ulcer which had formerly existed at this part. Every now and then, also, I have heard, from medical practitioners of my acquaintance, of a stricture of the upper portion of the rectum, or of the sigmoid flexure of the colon, having been discovered after death. *Such cases, however, you may be assured, are of very rare occurrence.* Inquire of anatomists who



have been for many years teachers in the dissecting-room, or of surgeons who have witnessed a great number of examinations in the dead-house of an hospital, and they will bear testimony to the correctness of what I have now stated.

Nevertheless, an opinion has of late years prevailed among some members of our profession, that a stricture high up in the rectum is a very frequent cause of constipation of the bowels; and I have known an almost incredible number of persons who have been treated on the supposition of their labouring under such a disease, by the introduction of long bougies into the bowel. The only evidence of the existence of a stricture in these cases has been, *first*, that there was obstinate costiveness; *secondly*, that a bougie introduced into the rectum could not be made to pass further than a certain number of inches beyond the anus.

But what is the value of this evidence when compared with that which anatomy affords of the rarity of this kind of stricture? Are there not many causes of a costive state of the bowels besides mechanical obstruction? Will it be always easy, even in the most healthy rectum, to introduce a bougie more than a few inches into it? Although we call the lower bowel the *rectum*, you know very well that it is anything but a straight gut. Three or four inches above the anus the rectum begins to make flexures, which increase as you trace it upwards, until they terminate in the sigmoid flexure of the colon. These flexures of the rectum differ in different individuals, and even in the same individual at different periods. When a bougie is introduced, be it small or large, it is certain that it will be stopped somewhere or another by one of these flexures; and nothing can be more unphilosophical than to conclude, because a bougie meets with an impediment at the distance of five or six, or eight or nine inches, that this is the result of an organic disease of the rectum, when the natural formation of the parts will sufficiently account for it.

But let us suppose that you actually meet with one of those rare cases in which there is a stricture in the upper part of the rectum; by what means are you to recognize the disease in the living person? Or, if you can recognize it, how can you know its exact situation? If the bougie can only be introduced to a certain distance, how are you to be certain that it is stopped by the stricture, and not by a fold of the bowel, or even by coming in contact with the sacrum?

Further than this, if you employ the force which you would suppose to be necessary to make the bougie penetrate through the stricture, is there no danger of it penetrating the tunics of the intestine instead? This last is no theoretical objection to the use of these long bougies in diseases of those parts. I will not say that I have seen the patients, but I have been informed, on good authority, of not less than seven or eight cases in which this frightful accident occurred, and the patients died in consequence.

Taking all these things into consideration, I advise you to lay it down for yourselves as a rule of practice, that you should not use

bougies for stricture of the rectum, except where the stricture is within reach of the finger. If there be any exceptions to this rule, they are very rare indeed.

---

## LECTURE XXXVII.

ON AN UNUSUAL FORM OF STRICTURE OF THE RECTUM. MALIGNANT DISEASES OF THE RECTUM. ON RECTO-VAGINAL COMMUNICATION.

THERE is a disease of the rectum in which there is generally, but not always, a contraction of the gut, which is not a malignant affection, and which, although frequently confounded with ordinary stricture, ought, as I conceive, to be distinguished from it.

This disease, so far as I know, is not distinctly noticed in books. I have observed it chiefly in women, and especially in those who have borne children. In the great majority of cases it has shown itself sometimes after a difficult labour. The patient complains of pain referred to the rectum, pain in the lower part of the back, a discharge of mucus from the anus, and some difficulty in passing the evacuations. These symptoms at first are trifling, but they gradually increase in severity as the disease advances. The patient then complains of exceeding difficulty in passing the evacuations, of constant pain—which, however, is greatly aggravated after the feces have been voided. There is a copious discharge of mucus; sometimes of blood, or of mucus tinged with blood. If you examine the bowel at this period of the disease with the finger, you find the inner surface of the mucous membrane irregular, as if it were lined with a multitude of small flat excrescences; or as if your finger came in contact with a surface covered with warts. There are generally, at the same time, some small flattened excrescences to be observed at the margin of the anus; something like shrunk or collapsed external piles, but smaller. Besides this, it seems, in some instances, as if the mucous membrane in the interstices between the excrescences was here and there in a state of ulceration. The examination with the finger, which is necessary for the ascertaining all these points, gives the patient extreme pain. Generally about an inch and a half, or two inches above the anus, you find a circular contraction, or stricture; but at other times there is no contraction whatever in this situation, while there is a very contracted state of the anus itself. In some instances there is the diseased state of the mucous membrane which I have described, without contraction anywhere; so that the contraction is an accidental, and not a necessary accompaniment of the disease.

When the disease goes on still farther, inflammation takes place in the cellular membrane in the neighbourhood of the gut, and an abscess forms, which bursts externally, near the anus, or on the nates,



or in the perineum. Other abscesses form which burst in other situations, one after another, in the same manner as after common stricture of the rectum. Sometimes an abscess forms in front of the rectum and bursts into the vagina, making a communication between the two organs. These abscesses continue to form for an indefinite time, so that ultimately there are a great number of orifices, all of which remain pervious. The abscesses seem, in fact, to have no disposition to heal; but sometimes they get into a quiet or tranquil state, there being but little inflammation, but little discharge of matter; and then, all at once, inflammation takes place again in one or more of them; there is a fresh accumulation of pus, and a fresh burst of it externally. It seems not improbable that these attacks of inflammation may, in many instances, at least, depend on small portions of feces getting into the abscesses from the cavity of the gut.

The disease which I have just described is very formidable, and it is one which, if left to itself, always proves ultimately fatal. Many years, however, may elapse before it has run its course; the patient all the time suffering miserably. At last she has shiverings, nocturnal perspirations, and a rapid pulse; she becomes emaciated, and dies worn out by hectic fever.

*Treatment.*—In the very advanced stage of the affection you can do but little for the patient; whereas, in the earlier stage, you may do much. I do not know that this disease can be actually cured except you are called in nearly at the period of its commencement; but, nevertheless, you may, in many instances, do a great deal of good in the way of palliating the symptoms and prolonging life. It is only every now and then that you are able to keep a particular case in view for a great number of years. I was, however, called to a patient labouring under this disease so long ago as the year 1812 or 1813, and I know that she was alive four or five years since, and rather better at that time, with respect to the condition of the rectum, than when I was first consulted; so that she must have lived seventeen or eighteen years after I was first consulted. I believe she has since died of a disease in the chest.

When you are called to a case of this kind, you have first to examine the state of the rectum—whether there be or be not stricture, whether the parts are in such a state that they will not bear local treatment. If the introduction of the finger does not occasion much pain, and if you find a stricture in any part of the bowel within reach of the finger, you may proceed to the dilatation of it with a bougie. In the first instance, introduce a common bougie into the orifice of the stricture; let it remain there for a few minutes daily, gradually increasing its diameter; and after a time you may arm the bougie with lint, well smeared with mercurial ointment. This is a good application to the excrescences with which the surface of the bowel is lined. You may pursue this treatment daily, or every other day, until you have dilated the stricture to a tolerable diameter, observing that if at any time there should take place an attack of inflammation of the gut, or in its neighbourhood, you are to lay aside the use of the bougie for a while, resuming it afterwards. If

the patient, however, be suffering a great deal of irritation, and the parts are exceedingly tender, so that they will not bear the contact of the finger, you may presume that they will not bear the contact of the bougie; and, under these circumstances, an opiate suppository may be introduced into the rectum every night; the bowels being at the same time kept gently open by means of lenitive electuary and sulphur, or small doses of castor oil, or some other simple aperient. By these means you may lessen the irritability of the diseased bowel, and, after a time, be able to employ a bougie, though you could not use it in the first instance.

The abscesses which form in the neighbourhood are to be distinguished from those which I shall describe hereafter under the name of *fistulæ in ano*. You will understand the difference when I come to explain the latter disease. They are not to be laid open like *fistulæ in ano*; they correspond to the abscesses that form in common stricture of the rectum; and the more you do to them, the worse they are, except it be when matter is collected which does not readily escape, and where a puncture with a lancet will give it a free discharge. These abscesses very seldom heal; but if the stricture be well dilated, and the mucous membrane of the bowel restored to a more healthy state, they will remain indolent, giving the patient but little inconvenience, and that only occasionally.

You may relieve the patient also by internal remedies, one of which I have already mentioned, viz.: a gentle aperient. Costive bowels are bad for the patient, for the hard motions will not pass through the contracted gut, or if they do pass, they are very injurious to the diseased membrane below. But purging is injurious also, and therefore very active purgatives are inadmissible. The balsam of copaiva, combined with caustic alkali, (the liq. potassæ,) for which I gave you the prescription in the last lecture, or the decoction of *achillea millefolium*, may also be given with advantage. I have seen some of these cases in the advanced stage of the disease, where the patient has derived much benefit from the internal use of arsenic; four or five minims of *liq. arsenicalis* being given three times a-day. The effect of the arsenic was to lessen the quantity of discharge from the bowel, and to diminish its irritability, at the same time improving the general health, and sometimes putting an end to the rigors to which the patient was liable. This last effect was especially observed where, as often happens, the rigors had assumed a periodical character.

You may easily recognize the disease which I have just described, by an examination of the inside of the rectum; but you may often detect it, when it comes before you, even before this examination is made. A woman complains of pain in passing her stools, and discharge of mucus; and these symptoms have come on after a difficult labour. On inspecting the anus, you discover some little flattened excrescences surrounding the orifice; and you may be quite sure, where there is this combination of symptoms, that if you introduce the finger into the rectum, you will find the diseased condition of it which I have now described.



## MALIGNANT DISEASES OF THE RECTUM.

Malignant diseases of the rectum are often confounded with simple stricture, and with that peculiar disease of which I have just spoken. The diagnosis is, however, of great consequence; for the treatment which is right in simple stricture would in general be wrong in these more formidable affections.

Malignant diseases of the rectum generally occur after the middle period of life; and patients affected with them have for the most part a sallow, unhealthy aspect, and very frequently labour at the same time under hepatic or some other visceral affection. Here, as in the case of malignant disease in other organs, the symptoms come on insidiously and slowly. The patient has a little uneasiness about the rectum; he thinks little of it. Then he finds some difficulty in passing his evacuations; but even this at first scarcely attracts his notice. Then the difficulty increases; the uneasiness becomes converted into pain; the stomach gets out of order, and the general health begins to fail. In the advanced stage of the disease, there is for the most part a great deal of difficulty in passing the evacuations, though that varies in different cases; and sometimes there is no difficulty at all, accordingly as the disease does or does not cause an obstruction of the bowel. By and by there is a constant discharge of bloody mucus, and constant pain, which is, however, aggravated after each evacuation of the bowels. The pain is especially referred to the lower part of the back, but there is also pain down the thighs, and in the nates and hips. If, at this period of the disease, you institute an examination of the rectum, you find the morbid growth a little way up the bowel, within reach of the finger. But, as you may suppose *a priori*, it varies in size, in figure and in position, in different cases. Sometimes there is a hard, solid tumour, occupying only a portion of the circumference of the rectum, and usually situated at the back part, with elevated edges, and, as it were, excavated in the middle, the bowel not being contracted in size, but as capacious as ever. At other times the morbid growth occupies the entire circumference of the bowel, which takes a winding course through its substance. Then, if you introduce your finger into the rectum, you meet with a large solid mass, and with some difficulty discover the orifice of the intestine in its centre. Sometimes the diseased structure extends down quite as low as the anus; more frequently it begins about two inches above it, the intestine below being in a healthy state. There is great variety also as to the extent of the disease upwards. It may be that the whole of it is within reach of the finger, so that the healthy portion of the intestine may be perceived above; and it may be, also, that it extends so high up that you can in no way trace its upper border. In some instances the disease is complicated with the addition of several pendulous excrescences, which come down through the anus when the patient passes his evacuations, and this very much aggravates his sufferings.

In the advanced stage of the disease, there is sometimes, but not

frequently, a large hemorrhage from the bowel. Abscesses form in the neighbourhood, and burst externally. In females, they burst into the vagina, and the opening is increased by ulceration, so that a large quantity of feces may be passed by that canal. In the male sex, ulceration will frequently make a communication between the rectum and bladder, or the rectum and urethra, and then the patient voids not only wind but feces with his urine. The urinary organs are liable to be affected in another manner: spasm is induced in the urethra, and the patient is liable to a retention of urine. This occurs especially in the cases of which we are now treating, but it will occur also in other affections of the rectum.

The patient goes on suffering in this miserable manner, his distress gradually increasing from the beginning to the end of the complaint; and at last he dies worn out, as he would be by malignant disease in any other organ, except that his sufferings are greater here than when it is situated on the surface of the body, and for an obvious reason—namely, that the ulcer in the surface of the tumour is constantly irritated by the passage of the feces. In some cases the morbid growth completely obstructs the passage of the feces, which become accumulated above it. The patient then has symptoms somewhat resembling those of strangulated hernia, and dies nearly as he might have died of this last-mentioned disease; or the bowel ulcerates immediately above the obstruction, and the feces escape into the general cavity of the peritoneum, and then he dies of peritoneal inflammation.

The general rule in this complaint is, that the patient suffers miserably, especially when it has arrived at its latter stage; but this rule has its exceptions, and I was lately called to this remarkable case:—The servant of an old lady, who was nearly helpless from age, took it into her head that her mistress passed her feces from the vagina. She mentioned it to the old lady's usual medical attendant, who questioned the patient, and found she was not aware of it; that she had no pain, and complained of no other symptom of disease, either of the vagina or rectum. By and by the servant repeated her assertion that the feces passed by the vagina, upon which the physician requested that I should be consulted. When I examined the rectum, as far as I could reach it was completely obstructed by a mass of solid substance, manifestly a malignant disease.—It appeared that ulceration had taken place in the rectum above the tumour, and to such an extent that the whole of the feces were passed by the vagina. This, it is true, was no trifling inconvenience, but it saved the patient from the dreadful pain of the feces passing over the surface of the diseased rectum.

The morbid growth in these cases is sometimes hard, seeming to partake of the nature of *scirrhus*; sometimes of a softer texture, and more resembling *fungus hematodes*. Here, too, as in other organs, the two diseases may be blended together in the same morbid growth; and there are many cases in which, although the disease is undoubtedly malignant, you scarcely know, from examining its structure, under what name it should be described.



*Treatment.*—All that is worthy of being said respecting the treatment of these unfortunate cases, may be comprised in a few words.

It has been proposed that the disease should be extirpated by an operation; and there is no doubt that if it were merely your object to excise the parts in which the morbid growth was completely established, so as to be distinctly perceptible to the finger, such an operation would in some instances be sufficiently practicable. But let me ask, what security would you have that the seeds of the disease did not exist in the mucous glands, or other textures above the tumour, and that your operation would soon prove of no avail? More than this: if you consider in what manner a malignant disease spreads, when once established in a particular organ, and the general ill success which attends the operation for its removal, even when performed under the most favourable circumstances, and where the whole organ can be taken away, can you reasonably expect that it will succeed under such circumstances as these, where you cannot take away the whole organ, and where it must be always doubtful whether you have been able to make a complete and satisfactory examination of the diseased part previously? Then consider, if much of the rectum were to be removed, what a frightful operation it would be, and in how miserable a plight the patient would be left afterwards? If ever such an operation be justifiable, it must be surely only under some very peculiar circumstances, where the disease was very low down in the gut, and quite in its earliest stage. In ordinary cases it ought to be entirely out of the question, as one which no conscientious surgeon can advise his patient to submit to.

Opiate injections into the rectum, and injections of linseed oil, either in its pure state or combined with lime-water, are sometimes useful in allaying the irritation of the rectum; and alkalies may be given internally, either with balsam of copaiva, or otherwise combined. In the advanced stage of the disease you must give the patient opium; you cannot help doing so; and, indeed, he must be kept very much under its influence to make life at all supportable. Yet there are great objections to the use of opium here, as in most other cases. You seldom meet with a patient on whom opium confers a benefit, without a corresponding evil. Opium, it is true, relieves the pain for a time, but it makes the bowels costive, so that it is very difficult to manage them. It stops the secretion of the liver, disorders the stomach, and injures the general health, making the patient at the same time nervous and irritable. Therefore I advise you not to give opium till you are driven to it. In the advanced stage of the disease all that can be said is, that you must have recourse to it as the least of two great evils.

#### RECTO-VAGINAL COMMUNICATION.

I have mentioned, in treating of the different diseases of the rectum, that a communication sometimes forms between the rectum and vagina. This is sometimes subsequent upon a difficult labour, just

as a communication is sometimes formed between the vagina and urethra, or bladder, from the same cause.

The communication between the vagina and rectum used to be one of the opprobriums of our art, the patient's life being rendered miserable, with little or no hopes of recovery. Of late, however, a simple and scientific method of relieving the patient in these cases has been contrived by Mr. Copeland, who has succeeded in curing several patients labouring under it, simply by dividing the sphincter muscle of the anus. The sphincter muscle being divided, the feces are not retained in the rectum; they run out as fast as they enter it, so that the bowel is kept empty and contracted, and altogether in a passive state, and the communication between the rectum and vagina is thus enabled to cicatrize. I do not know whether this would answer if the communication were of large size, but I am told that it has answered very well in the cases in which Mr. Copeland has hitherto employed it. I cannot but regard the application of this operation to these cases as one of the principal improvements of modern surgery; and the simplicity of the practice forms one of its principal recommendations. Of course it can be recommended in those cases only in which, independently of the opening into the vagina, the parts are in a healthy state.

---

## LECTURE XXXVIII.

### ON DISEASES OF THE MAXILLARY ANTRUM.

I SHALL draw your attention to-day to a case in one of the upper wards, that of Samuel Tovey, admitted on the 1st of this month.

Eight years ago he fell down as he was walking on the slippery pavement, by which his nose, and the whole left side of his face, were bruised. Ever since he has had pain of these parts. The left side of the face became swollen; the pain increased, and matter was discharged through the nostril. Matter also occasionally made its way through one of the alveoli of the superior maxillary bone; and he continued in this state at the time of his admission into the hospital.

On the 7th November I made an incision which separated the upper lip, or rather the cheek, from the jaw; and a probe having been introduced, it appeared to me that the extremity of it came in contact with a portion of dead bone, in the situation of the antrum maxillare. I then introduced a pair of strong sharp-pointed scissors, using them in their closed state as a chisel, to break down the thin plate of bone above the grinding teeth, so as to expose the cavity of the antrum, in which I could then feel small fragments of dead bone, some of which were extracted. On the following day some other small portions of dead bone passed through the nose. There were now



swelling and pain on the left side of the face, with a good deal of headache, and a frequent pulse. The patient was ordered to be purged. On the 9th, two days after the operation, he had shivering, and was delirious in the night. On the 10th, however, he was much improved, able to get up; and to-day, the report is, that the pulse is slower, easily compressed; the tongue clean; the bowels open.

Here was a patient who had met with a severe blow on the head and face eight years ago, who had been suffering ever since; and now I have made an opening into the antrum, and extracted fragments of dead bone which were lying in its cavity. No doubt there are other fragments there; and I expect that they will come away through the opening that has been made. There can be no question that, at the time of the injury, some mischief was inflicted on the bones, which caused portions of them to die, some of these afterwards coming away by themselves, while others could not be removed without this operation.

The occurrence of this case affords me the opportunity of speaking to you concerning diseases of the maxillary antrum generally. I am glad to draw your attention to this subject, because it is one of great interest, and also one of which I do not think there is in general any very clear account given by surgical writers. I may add another reason, namely, that cases of disease of the antrum are not sufficiently common occurrences for many of you to become masters of the subject by what you see during one or two years' attendance on hospital practice.

#### INFLAMMATION OF THE MAXILLARY ANTRUM, INDEPENDENT OF LOCAL CAUSES.

I have seen cases, and to these I shall first call your attention, in which there appeared to be inflammation of the maxillary antrum, independent of a local cause, arising out of something in the state of the constitution, and approaching in its character a good deal to that of severe rheumatic inflammation. I do not know that I can make you acquainted with the history of the disease of which I am now speaking, better than by describing to you the circumstances belonging to a particular case, of which I happen to have preserved notes. I was consulted with Mr. Clough, of Norton Street, respecting a young man who complained of excessive and constant pain referred to the situation of the maxillary antrum of the left side. There was some degree, but not much, of tumefaction of that side of the face; tenderness in the situation of the antrum everywhere; the very severe and constant pain which the patient endured being aggravated by pressure. In addition to these local symptoms, there was a good deal of febrile excitement of the general system. The disease had existed for two or three weeks, gradually increasing up to the time of my being consulted. Believing this, then, to be a case of inflammation of the maxillary antrum, and thinking it not improbable, from the time that the inflammation had lasted, that suppuration might have

already taken place in the cavity, I made a perforation into it above the second molaris. (I shall speak of the manner of making the perforation presently.) No fluid, however, of any kind escaped through the aperture. I then recommended what I had found successful in some other cases, that the patient should take pills, composed of two grains of calomel and half a grain of extract of opium, three times daily. In about three days the gums were a little sore, the pain began to abate, and at the end of three or four days more the symptoms had entirely subsided. I believe that, when you are called to a case of this kind, you will seldom find the plan of treatment which I have here described to fail.

But inflammation of the membrane lining the antrum may end in suppuration, so that there may be a collection of pus in the cavity of the antrum, and I conclude that such acute inflammation as existed in the case just described might terminate in this manner, if not artificially arrested.

#### INFLAMMATION OF THE ANTRUM DEPENDENT ON LOCAL CAUSES.

However, where matter forms in the cavity of the antrum, I certainly believe that in most instances, there is some local mischief first, and that suppuration of the membrane lining the antrum supervenes as the consequence. The cause in which the disease originates is generally a diseased tooth. The patient has a bad tooth in the upper jaw, one of the molares, or perhaps one of the bicuspides (or it may even originate in the cuspidatus when the fang comes near the antrum). The tooth is carious, and by and by the patient has the toothache. He does not like either to lose the tooth or to submit to the pain of having it drawn, and so he submits to the toothache. The inflammation on which the toothache depends then terminates, as it always does, in the death of the pulp of the tooth. Then the whole tooth dies, and it is now like a portion of dead bone, or any other foreign substance, stuck in the jaw. Such a dead tooth may remain in the jaw for many successive years, exciting no irritation, and leading to no mischief. In other cases, however, the tooth begins, even at an early period, to operate as a cause of irritation, and it almost invariably does so ultimately. Then inflammation takes place at the bottom of the alveolus, and is followed by suppuration. The matter cannot readily escape; perhaps it makes its way downwards between the tooth and the alveolus, and presents itself in the gum, forming a kind of gum-boil. At other times the tooth is so firmly wedged in the alveolus, that the abscess cannot find its way in this direction. Under these circumstances it collects at the bottom of the alveolus, and occasions the patient extraordinary pain and suffering. The matter lying upon the bone destroys the periosteum lining the alveolus; the bone itself becomes absorbed; and the inflammation extends to the mucous membrane lining the antrum. Sometimes a small fragment of bone in the neighbourhood loses its vitality, and there is then a piece of dead bone separating the alveo-



lus from the antrum, and producing suppuration in this cavity. Thus there is an abscess in the antrum, with a splinter of dead bone above, and a dead tooth also at its inferior part. While this process is going on, the patient suffers at first an extraordinary degree of pain from the matter pent up at the bottom of the alveolus; afterwards, when the antrum becomes affected, he complains of a dull constant pain in the cheek, with the addition of certain lancinating pains coming on as an aggravation of the pain which is constantly endured. There is then an effusion into the soft substance under the skin, rendering the face on that side œdematous, with a slight degree of red discoloration on the surface; and the patient may remain in this condition for a great length of time. In some cases matter is discharged by the nostril, but not always, for the inflammation of the antrum may have the effect of stopping up the orifice where it communicates with the nostril, between the two turbinated bones. When the opening of the antrum remains pervious, the patient will, of course, experience occasional relief from the matter passing into the nostril. I have said that sometimes there is, and sometimes there is not, a fragment of dead bone; but this, as far as I know, makes no difference in the symptoms, although when there is dead bone, the recovery of the patient may be expected to be more difficult and tedious.

*Treatment.*—In these cases you may relieve the symptoms for a time by applying leeches to the cheek, by the exhibition of purgatives, and by adopting what is called an *antiphlogistic* treatment of other kinds. But it is evident that such antiphlogistic treatment can only *relieve* the symptoms—it cannot strike at the root of the disease.

The first thing to be done is to extract the dead tooth; and it may be that this is all that is wanted. If, when the tooth is drawn, there is a free communication between the alveolus and the cavity of the antrum, the matter is discharged through the opening, and the patient is immediately relieved. In other cases, however, when the tooth is drawn, either the abscess of the antrum does not discharge itself at all through the aperture, or it does so only in an imperfect manner. The plate of bone between the alveolus and the antrum is generally very thin, and you may easily introduce a sharp-pointed instrument into the bottom of the alveolus after the tooth is extracted, and break it down, so as to establish the communication which is wanted. This must always be done whenever the extraction of the tooth does not leave any or a sufficient opening for the discharge of the matter from the cavity above.

The instrument with which you make the opening should be formed like a common hydrocele trocar, but a little larger (of course without a canula), and it should not be made of the best steel; for I once used a common trocar, made of steel, in an operation of this kind, and it broke while I was performing it. In this case, I extracted the broken portion very easily, but you can conceive that such an accident might occur, and you might experience great difficulty in extracting the point of the instrument. The steel, then, ought not to be very finely tempered, but such as would bend a

little instead of breaking. There is no occasion for its being otherwise; for you do not want a very sharp-cutting instrument. It is sufficient if it be strong, and will not easily break.

When the bottom of the alveolus is broken down, the matter will readily escape from the antrum, and you may introduce a probe and explore its cavity, so as to ascertain whether there be in it any dead bone or not. Sometimes there is a piece of dead bone at the bottom of the alveolus, and then you have only to wait patiently till an opportunity occurs for its removal. At other times you will feel the dead bone after the probe has entered the antrum, and the opening already made may not be sufficient for its extraction. Under these last-mentioned circumstances, the opening must either be enlarged or another made in a different place. When a free opening has been formed into the antrum, you should allow the patient at first to remain quiet, with a piece of bougie or gum catheter retained in it, in order to prevent its closing. This should be taken out two or three times daily, to allow the escape of the matter. After two or three days, being provided with a syringe having a slightly curved pipe, small enough to enter the opening, you should begin to wash out the cavity of the antrum by injecting some tepid water into it once or twice daily. The water injected will generally pass into the nostril, showing that the natural aperture of the antrum remains pervious; and if it be, then you are able to wash it out more readily and completely than you could do otherwise. If you find that the injected water does not pass out of the nose, you will know that the natural opening between the two turbinated bones is blocked up, and you will then have a little more trouble in washing the cavity of the antrum thoroughly out.

Let us suppose another case—viz.: that a dead tooth has been allowed to remain until it has produced suppuration of the antrum; that it has then been extracted; that nothing further has been done; and that the patient has been left either with no opening at the bottom of the alveolus or one that is insufficient. Under these circumstances, the bottom of the alveolus becomes filled up with new bone, the edges at the inferior part are absorbed, and the alveolar cavity no longer exists. It is absolutely necessary to the patient's recovery that an opening should be made into the antrum: but where, in such a case as this, would you make it? In the situation of the alveolus? This is an awkward place for the purpose, on account of the thickness of the bone which you have to penetrate. It may be a good situation when the tooth has just been drawn, but if it is a very bad one when the jaw has become consolidated afterwards. The best mode of making the opening is this: raise up the cheek so as to expose the membrane covering the gum on the side of the face, and with a scalpel make a transverse incision down to the bone. Always make this incision through the membrane before you begin to perforate the bone. In one case I did otherwise, thinking the division of the membrane, as a separate part of the operation, was unnecessary; but the consequence was, that the blood escaped into the cellular membrane beneath, and there was an immense



ecchymosis, making the rest of the operation very difficult. Always, then, divide the membrane first, where it covers the jaw just above the alveolar processes of the grinding teeth, and then perforate the thin plate of bone as nearly as possible to what you suppose to have been the original seat of the disease.

What instrument is to be employed in making the perforation—a trephine? That is quite unnecessary. Nothing is better than a pair of sharp-pointed strong scissors; apply them to the bone in their closed state, using them as a chisel, and they will easily penetrate it, and go into the antrum. You have then only to press on the scissors, giving them at the same time a rotatory motion, and you will easily break away a circular portion of bone. If the opening be not sufficient, a broader pair of scissors may afterwards be used to enlarge it; which you may do easily, so as to make it of almost any dimensions. That is the way in which I performed the operation the other day, and you know that the finger easily penetrated through the opening thus made into the cavity of the antrum. The opening being completed, you may introduce a probe or your little finger, to ascertain if there be any dead bone. As the soft parts contract, it will become necessary for the patient to wear a plug in the orifice, to prevent it being closed. A piece of ivory or box wood answers the purpose very well. The plug should be conical in shape, so that it may not slip into the cavity of the antrum. It should be withdrawn twice daily, and a little tepid water injected into the antrum to wash it out. This practice may be continued as long as the discharge of pus continues, or as long as you have reason to suspect that there is any dead bone to come away.

In some cases the patient recovers perfectly after the operation, and in others not. A lady consulted me, who had had symptoms of abscess in the antrum for many years, being otherwise in very ill health, and there was the greatest reason to attribute her ill health in part to the putrid matter collected in the antrum passing through the nostril into the fauces, and being swallowed during sleep. There was a carious tooth, which was extracted, and I then made a wide opening from the bottom of the alveolus into the antrum, and let out a good deal of pus. A plug was kept in the opening, and the antrum washed out night and morning—the fluid used in the injection flowing into the nostril. No dead bone ever came away, nor was any ever felt by the probe; but, nevertheless, the suppurative discharge continued. The patient, some few years afterwards, died of disease of the lungs, and I believe that to the day of her death the discharge of pus from the antrum had not ceased. Where there is extensive dead bone which does not come away easily, of course you will understand that suppuration must continue; but here it continued although there was no dead bone—at least none was ever discovered.

## COLLECTION OF TRANSPARENT FLUID IN THE ANTRUM.

The next disease of the antrum of which I shall speak, is one of more rare occurrence; in fact, I have seen only two cases, and I can find only one or two instances of the kind on record. A lady consulted me with a large projection of one cheek. It looked as though she had a large plum in her mouth. I lifted up the cheek, and found a projection in the situation of the antrum of one side, elevating the membrane from the gum, and the flesh of the cheek also. This projection was as large as a pigeon's egg. The surface, where it was covered by the membrane of the cheek, gave way a little under the pressure of the finger. There was no distinct fluctuation, but a kind of crackling sensation communicated to the fingers, as if you pressed upon very thin horn, or dry parchment. This being the first case of the kind that I had met with, I did not know what it would turn out to be, and I thought it likely that there was some solid tumour in the antrum. I took a curved scalpel, not bent in the direction of the cutting-edge like a bistoury, but bent laterally, with a strong sharp point, (which I had found very useful on some other occasions), and introduced the point into what seemed the thin bony parietes or boundary of the tumour: having previously dissected the membrane of the cheek from the jaw. Immediately there escaped a large quantity of transparent fluid, like very thin mucus; something like what we find in cases of ranula. I then introduced a probe into the cavity of the antrum, and found that it might be passed in any direction. There was neither tumour nor dead bone, and the cavity seemed to be in a natural state, except that it was enormously dilated. I next enlarged the opening, cutting out a circular portion of thin bony shell formed by the expanded parietes of the antrum. After the operation the tumour subsided, and in the course of a few weeks the cheek was not larger than the other. The aperture made by the scalpel has continued pervious to this day, though it is ten years since I performed the operation. The lady wears a plug, which she takes out night and morning, and with her own hand introduces the point of a syringe, and washes out the antrum. I suppose that there can be no doubt that, in this case, from some accidental cause, the natural aperture into the nostril had become closed, and that the mucous secretion of the antrum, having no means of escape, collected and distended the cavity to this large size. The same thing happens to the gall-bladder when the ductus cysticus is obstructed: the gall-bladder then becomes enormously distended—not with bile, but with transparent mucus.

This last summer I was consulted, with Mr. Lawrence, concerning a case exactly similar to the one which I have just described, but it occurred in a boy. Mr. Lawrence made an opening into the tumour, and let out a large quantity of transparent fluid. I have not heard of the patient since, but I have no doubt he completely recovered.



## POLYPUS OF THE ANTRUM.

Surgical writers describe polypi as arising from the mucous membrane of the antrum;—nay, some have gone so far as to tell you how you are to apply a ligature round the base of this polypus, so that it may wither and drop off. The history and treatment of such a polypus is, however, altogether hypothetical. No polypus, I believe, ever existed in the antrum, around which a surgeon could put a ligature; and I never heard of the operation being performed, though it has been described by some writers.

## MALIGNANT TUMOURS OF THE ANTRUM.

Tumours of a malignant kind, however, grow in the antrum, partaking partly of the nature of fungus hæmatodes, and partly of carcinoma. They are attached to the mucous membrane, and soon grow so as to fill up the cavity. I suppose that at first they produce but little pain, and that the patient has scarcely any symptoms of disease; at any rate there are no symptoms by the description of which the surgeon would be able to recognize the existence of disease in its very early stage. But it is otherwise as the disease advances. The tumour, growing larger, presses upon the inner surface of the antrum, and causes its bony parietes to become dilated. By and by it makes a projection in the cheek, just like that which I described in the last case, where there was a collection of mucus in the antrum. After a time there is another projection in the situation of the bony palate—that is, the tumour presses upon the floor of the antrum, as well as at the sides. Then another projection occurs at the inferior part of the orbit; and there is another still blocking up the nostril; in fact the antrum becomes distended everywhere, causing an enlargement of the cheek, bringing the bony palate to a level with the grinding teeth below, and diminishing the cavities of the orbit and nostril. The bony substance of the antrum becomes absorbed under the pressure of the tumour; the base of the alveoli is destroyed; the teeth are rendered loose, so that they merely hang in the jaw by flesh, and you can extract them with a pair of forceps, or they drop out of themselves. The tumour goes on increasing until the antrum will admit of no further distension; ulceration takes place, and the malignant growth projects through the ulcerated opening. Generally it projects, in the first instance, under the cheek. A large ulcer is formed there, and the tumour appears through it. It then makes its way by ulceration into the mouth and orbit; sometimes it pushes the eye upwards, and at other times forwards, so that it is quite out of its natural place; and in either case it occasions blindness. As the disease makes still farther progress, it forms a large tumour in the mouth, compressing the tongue, and preventing mastication.

The malignant growth having made its way externally, and being

freed from the pressure of the neighbouring parts, increases at a still more rapid rate than before. There is profuse discharge, occasional hemorrhage; and the patient is worn out partly by these causes, partly by misery and anxiety of mind, and by starvation: for now he is unable to masticate solid food; and as the destructive process of the parts in the neighbourhood goes on, there is at last great difficulty in swallowing even liquid nourishment, only a small portion of which goes down the throat, while the greater part passes out at the aperture in the cheek. I do not know anything more miserable than the death-bed of a patient who dies from this horrible disease. Such is a brief history of its progress; but if you wish for further information on the subject, you will find an excellent and very graphic account of it in Mr. Travers' paper on Malignant Diseases, published in one of the volumes of the Medico-Chirurgical Transactions.

I suppose that it is this disease of which some surgeons have conceived that it might be removed by ligature. Others have imagined that it might be got rid of by other means; that we might make an opening into the antrum before the tumour acquired a very large size, turn it out with the fingers, and apply the actual cautery to the surface from which it grew. I believe there is a case recorded by Desault, where this operation was performed, and it is spoken of as being successful. But if I remember right he gives the history of the case no later than three months after the performance of the operation; and you all know that a malignant disease may appear to be cured for a twelvemonth, and yet return. The circumstance of the patient appearing to be tolerably well three months after an operation of this kind, by no means proves that it produced a permanent cure.

I did attempt to destroy a tumour of this kind formerly, in the following manner: It was in the early stage of the malignant growth; but the cheek bulged out over the dilated antrum, and the bone of the antrum was absorbed. With a common scalpel I cut out a large portion of the membrane, which now formed the only boundary of the antrum. I then found a large tumour suspended, as it were, in the antrum, appearing to grow from a broad surface. The outer part of the tumour was of soft consistence, which I broke down with my fingers, and I then turned the tumour out, so that the antrum appeared to be perfectly empty. But this was not done without an enormous and indeed frightful hemorrhage. I introduced a quantity of what we call *blue lint*—that is, lint dipped in a solution of copper, and then dried, and filled the cavity of the antrum with it, hoping that this might make the base of the tumour to slough off. Sloughs did come away, but, nevertheless, there was no destruction of the disease. I applied caustic afterwards, and the actual cautery very extensively, but without at all checking the growth of the tumour, which went on in spite of all the plans I adopted with a view to restrain it: in short it grew faster than I could destroy it, the cheek ulcerated, and the patient died in the miserable way that I have just described.



## LECTURE XXXIX.

## ON ENCYSTED TUMOURS.

In this lecture I shall make some observations on the case of a little girl who was in one of the upper wards with a large encysted tumour, containing watery fluid, and occupying a considerable portion of the left hypochondrium. The following are briefly the notes of the case:—

“Harriet Copeland, æt. 9, was admitted on the 12th of March, with a firm elastic tumour in the left hypochondriac region, pushing forwards the integuments, and extending backwards, beneath the lower ribs to the left side of the spine. No pain was felt on pressure. The appearance of the neighbouring skin was perfectly natural, and the patient’s general health was good. Her mother states that about twelve months ago the child had received a severe blow in the left side from her schoolmistress. The pain which immediately followed soon subsided; and the occurrence was forgotten until about three weeks before she was admitted into the hospital, when, in the act of running, she struck her side with much violence against a post. Great pain followed the accident; and on examining the part, her mother first discovered the tumour, in the situation above described. At this time it was equal in size to a hen’s egg, but it rapidly increased in growth, and it is now as large as an orange.”

Having inquired into this little girl’s case, I was led to believe that she had an encysted tumour in the abdominal cavity, and that it was probably connected with the liver. I determined, however, to keep her for some time in a state of quiet, in order that we might watch the undisturbed progress of the disease, and that I might be able to judge whether this opinion was correct. On the 30th of April the tumour had considerably increased in size, and presented to the fingers a distinct sense of fluctuation. I now punctured it with a small flat trochar, and drew off about eight ounces of a clear watery fluid, in which was found no coagulable matter. It will be unnecessary to occupy your time with the minute details of this case, the more so as they may be seen in my Clinical Book, to which you have all access. The principal facts may be thus briefly stated:—

After the operation, the patient vomited. Inflammation, beginning at the seat of the tumour, followed, and extended to the neighbouring parts. Bleeding, purging, and other antiphlogistic remedies were of course employed. In spite of all, however, the belly became swollen, tympanitic and tender. Shortly after a swelling, which was attended with considerable pain on pressure, showed itself, occupying the place of the original tumour. On the 19th this had increased in size, and the fluctuation of fluid was perceptible in it; but in a few days more it had altogether disappeared, and pus mixed with

feces came away from the bowels. On the 29th a membranous cyst, of which the parietes in their contracted state were of considerable thickness, was found in one of her evacuations. From that time the patient began to mend, and was soon convalescent.

The important parts, then, of this case may be thus briefly summed up:—There was a tumour in the left hypochondriac region filled with fluid. The tumour was punctured. The fluid, when drawn off, resembled clear water, and was found to contain no coagulable matter, or so little as to be scarcely perceptible. Inflammation ensued. A swelling, having the character of an abscess, then formed, which soon disappeared, and disappeared exactly at the same time that a purulent discharge came away from the intestinal canal. From all these circumstances, conjoined with the final separation of the cyst, it would seem, that after the operation, the cyst suppurated, and that having discharged its contents through the bowels, it afterwards made its way into them by ulceration.

The opinion which I at first formed respecting the nature of this disease, was in a great measure deduced from two cases which were under my care some years ago. I was consulted respecting a lady who had a considerable fluctuating tumour in the right hypochondrium. It was larger than the one of H. Copeland, but in every other respect was similar to it. The only symptoms which seemed to accompany it, were some slight pain in the side, and some difficulty of breathing, in consequence of the pressure which it made on the diaphragm. A most intelligent physician who was in attendance, thought that there was an abscess in the liver; and the first appearance of the tumour was anything but unfavourable to such a supposition; but, then, there were none of those severe constitutional symptoms with which abscess of the liver is usually accompanied. The tumour went on increasing in size, and at last I proposed that it should be punctured. Accordingly this was done; and about three pints of a clear watery fluid were drawn off, containing no coagulable matter, and little animal matter of any kind. The edges of the wound were brought together with sticking plaster, and a bandage applied. After the operation, the patient was annoyed by a most violent and incessant cough, which, as it was attended with no constitutional symptoms, and with no other pulmonic symptoms, I was led to think depended either upon hysteria, or upon the sudden abstraction of pressure from the diaphragm, or on these two causes combined. In three weeks, whatever was its cause, the cough entirely left her. No pain was felt in the situation of the puncture. She got quite well, and to my certain knowledge continued well for at least the space of six years. Indeed, I have every reason to believe that she is so still. A few months afterwards, a little boy was admitted into the hospital with a tumour also in the right hypochondrium, smaller than the last, but in every other respect closely resembling it. I treated it in the same way, that is, by puncturing it with a trochar; and the clear watery fluid which came away was exactly similar to that which had been drawn off in the other case. No inflammation, nor any troublesome symptom, followed, and the



boy left the hospital as cured. Whether he remained well for any length of time, or whether the disease returned, I cannot positively say; but it is most probable that, if it had returned, I should have known it.

I shall give my reasons presently for believing that these membranous cysts were connected with the liver. But similar cysts may exist elsewhere. They are not very uncommonly met with in the breast. Not that every encysted tumour of the breast is of this kind: far from it. Sometimes, on cutting into a mammary encysted tumour, you find that the fluid, instead of being clear, like water, has the appearance of dark brown turbid serum, containing much coagulable matter. In these cases there is generally, in addition to the cyst, more or less of solid substance, approaching to the character of a malignant disease: I do not mean that it is actually carcinoma; in fact, it is less liable to return after it has been removed than carcinoma, but still, if left to itself, it runs the course of a malignant tumour, and is incurable, except by operation. The species, however, of mammary encysted tumour which I first mentioned, in which there is merely a thin cyst containing nearly pure water, is altogether independent of malignant disease. If, after puncturing one of these cysts, and letting out the fluid which it contains, you do nothing more, you will find that when the wound heals, the cyst again fills. But if you dissect it out, taking great care to leave none of the cyst behind, there will be no return of the disease. Sometimes stimulating applications will succeed in effecting a speedy and a permanent cure, so that an operation may be avoided. I have known this to happen in more than one instance.

A lady, having one of these encysted tumours of the breast, consulted me. It was as large as a small orange. I punctured it, and drew off a considerable quantity of clear watery fluid. The wound healed up and the cyst again filled. I then advised her to have the tumour removed by excision. She made no objection, but requested me, for certain reasons, to defer the operation for a fortnight or three weeks. This being settled, I advised her in the meantime to apply to the breast an embrocation, which was much used by Sir Everard Home, and, as I believe, before him by Mr. Pott, and which I have found of so much service, that I will give you the prescription. It consists of proof spirit and camphorated spirit, of each  $\text{ʒiiss}$ ; Goulard's extract,  $\text{ʒj}$ . A flannel is to be dipped in this, and to be applied to the part several times daily, being allowed to remain there. Well, then, to return to my case: this treatment was followed for three weeks, at the end of which time the lady said that she was quite prepared for the operation. But now, on examining the breast, I found that the tumour had altogether disappeared. This case is the more interesting, inasmuch as the tumour was of a large size. Exactly the same thing happened in another case of mammary encysted tumour for which I proposed the operation, and which differed from the last only in being somewhat smaller in size. I do not say that in such cases the embrocation will always succeed. But it never does harm, and has succeeded quite often enough to entitle it to a

fair trial before resorting to excision. Probably some other stimulating application would answer the same purpose.

Tumours of the same kind occur in connection with the testicle. The encysted hydrocele of the testicle, which is sometimes erroneously supposed to be a double or lobulated testicle, consists of nothing but one of these cysts situated between the inner layer of the tunica vaginalis and the fibrous membrane of the tunica albuginea. A similar cyst occurs every now and then in the epididymis, between its convoluted tube and the tunica vaginalis, by which it is invested. Then, again, it is one of the same cysts which constitutes the encysted hydrocele of the cord, in which disease the tumour is extremely loose and movable; so much so, that it may, when of a moderate size, be pushed up through the external ring, not into the abdomen, but behind the tendon of the external oblique muscle, and hence it is sometimes confounded by an inexperienced surgeon with inguinal hernia. In all such cases the fluid which the cysts contain, is sufficiently characteristic of their nature. It is a clear watery fluid, the cases in which it is serum, like the fluid of a genuine hydrocele, being very rare indeed. In examining bodies after death, my attention has been often attracted by small membranous cysts situated between the glandular structure of the liver and its peritoneal covering. Sometimes I have seen them as large as a walnut, at other times as large as an orange; but there is no reason why they should not attain to any magnitude. Now, as we know that these tumours do occur in connection with the liver; that they occur but very rarely indeed in the spleen, and as far as I know, still more rarely in the other abdominal viscera; and as the position of this tumour in each of the cases which I have described, made its attachment to the liver by no means improbable; I suppose this was the real seat of the disease; and I think that you cannot doubt this to be a legitimate conclusion.

In the two cases of this kind which first fell under my observation, no bad symptoms followed the operation. In this last case, however, inflammation and suppuration were the consequence of it. The cyst seems to have contracted adhesions to the colon, and having discharged its contents into it, escaped, by ulcerating its way probably into the transverse arch.

As soon as I saw that the tumour had returned, my determination was to make an opening into it, and to give exit to the confined pus; but, while I was waiting for a good opportunity of doing this, a purulent evacuation from the bowels took place, and of course it was then too late for what I had intended.

There can be no doubt of the propriety of puncturing cysts of this kind, when they have attained such a magnitude as to be inconvenient from their bulk. There is no reason for puncturing them sooner, and there are good reasons against it. The object of the operation is simply to draw off the watery contents of the cyst, and if these should become again collected, the puncture may be repeated. In Copeland's case, however, there can be no necessity for any second operation. The cyst having suppured, and afterwards sloughed,



there must be a radical cure of the disease: but we must acknowledge that this advantage has not been obtained without the patient having incurred a certain degree of risk, which we should endeavour to avoid in future. In the two former cases I merely drew off the water, without taking any great pains to empty the cyst completely. In this last I *now* think that I was over anxious to obtain this last object; and to the pressure which was in consequence made on the cyst, while the canula remained in it, I cannot but, in great measure, attribute the inflammation, suppuration, and sloughing of the cyst, which followed.

You will perhaps inquire, for what reason did I puncture the cyst with a trochar instead of using a lancet? The answer is plain enough. The cyst is more readily emptied by means of a canula than without it; and if there were no adhesions of the cyst to the peritonæum lining the abdominal muscles, and you were to puncture it with a lancet, the fluid would escape into the cavity of the abdomen,—an evil which must be avoided when the operation is performed with a trochar.

---

It has been my endeavour [in the preceding lectures] to give you some information, which, of however little value it may be to those experienced in surgery, may, I hope, be of use to you who are younger men. But I have had another object in view in the construction of these lectures. They have been entirely practical, and, with hardly any exceptions, have been drawn from my own observation and experience. I wished to set you an example of what your own mode of study ought to be. In these times there is a great quantity of medical literature, such as it is. There are books on specific disease, dictionaries, cyclopædias, compendiums, and manuals, of all kinds; and nothing is more easy than for a person with a tolerable memory to look into books and learn by heart the prevalent doctrines and opinions of the day, and then to be able to discourse on those subjects as if he really understood something of them, and to go and pass what is called a good examination; that is, to answer every question that is put to him. You may be successful in qualifying yourselves in this manner, but, depend upon it, it will be of no avail to you in future life. A man who gets up this sort of knowledge from books is good for nothing. He goes to the bedside of a patient, but he knows nothing either of the disease or of its treatment, and he is, therefore, in doubt about it. He has not that confidence in himself which enables him to take every responsibility, and which medical practitioners must do in difficult cases. You must, in order to be qualified for the situations which you are hereafter to fill in life, gain your knowledge, not from books, but from your own investigations. I do not say that you are not to look into books and to read them, but it should only be done in conjunction with prac-

- tice. If you have a particular case before you, refer to a good book, and that will enable you to examine it far better than you would otherwise do; but the principal thing is to observe for yourselves. This remark applies to anatomy, to surgery, and to physic. You may get up anatomy by being examined by your teachers, by learning books by heart, and appear a very good anatomist to the man who examines you; but that knowledge will be of no service whatever in practice. No anatomical knowledge is of any use excepting that which you obtain by seeing the parts in the lecture-room and then examining them for yourselves, and by your own hands in the dissecting-room. I can assure you that there is no other anatomical knowledge worth having, and the man who has qualified himself merely to pass an anatomical examination in the way to which I have referred will find that he has no chance whatever when he comes into competition with one who has made himself an anatomist in the proper way. So it is with respect to hospital practice; you must look at the cases and study them for yourselves. Examine the cases in the morning and refer to books in the evening, otherwise you will have no useful knowledge. Consider the observations which drop from the medical officers, compare what they say with the living person, and take notes with your own hands. No person can learn either medicine or surgery who does not take notes, for it is the only way to obtain that knowledge which is necessary in practice.

I take the liberty of making these observations, not that you particularly need them, but they may be of use to younger persons in the profession. The way which I have pointed out is the only one in which you will be enabled to succeed in your profession, and to practise it with comfort to yourselves and advantage to the public. In fact, I think that very few will get into practice at all who do not pursue the study of the profession in the practical manner which I have suggested. I offer these remarks with an entire feeling of friendship, and with the most earnest wish that you may be successful in your profession and do honour to this school.



# I N D E X.

- Abscesses in vicinity of rectum, 184  
     —, secondary, 45  
 Amputation for cure of hysterical affections  
     of extremities, 268  
     —, whether it should be performed  
     whilst mortification is going on, 66  
 Amputations should not be performed with-  
     out a tourniquet, 35  
 Angina pectoris, 87  
 Anthrax, 99  
 Antrum, collection of transparent fluid in,  
     341  
     —, malignant tumours of, 342  
     —, maxillary diseases of, 336  
     —, polypus of, 342  
 Aphonia, hysterical, 254  
 Arm, case of varicose veins of, from disease  
     in bronchial glands, 112  
 Arteries, ossification of, 85  
 Arteritis, mortification from, 82  
 Bee, death from sting of, 33, 79  
 Bite of a rabid animal, treatment of, 69  
 Bladder, foreign bodies in, 176  
 Bleeding in the vena saphena major, 119  
 Breast, fungus hæmatodes of, 221  
     —, hysterical affecti of, 255  
     —, scirrhous of, 214  
     —, sero-cystic tumours of, 207  
 Bunion, 131  
 Carbuncle, 99  
 Carcinoma of tongue, 148  
 Caustics, 67  
     —, action of different, 67  
     —, cases to which they are applied, 68  
     —, modes of applying, 68  
 Children, paralysis in, 166  
 Circocœle, 111  
 Cæcum, foreign body in, 173  
 Cold, effects of excessive, 81  
 Corns, 126  
 Dry gangrene of skin, 96  
 Epulis, 76  
 Erysipelas, after operations, 40  
     —, causes of, 40  
     —, whether contagious, 40  
 Eyelid, paralysis of, 166  
 Face, half malignant tumours of, 73  
     —, paralysis of one side of, 165  
     —, ulcerated tumours of, 75  
 Facial neuralgia, 298  
 Fistula in ano, 184  
     —, cause of, 188  
     —, manner in which it forms, 187  
     —, symptoms of, 189  
     —, treatment of, 191  
 Foreign bodies, extraction of, 167  
     —, in cæcum, 173  
     —, nostrils, 167  
     —, œsophagus, 170, 174  
     —, rectum, 173, 175  
     —, stomach, 172  
     —, Foreign bodies in tonsils, 170  
     —, trachea, 180  
     —, urinary organs, 176  
     —, various parts of the body,  
         178  
 Frost bites, 81  
 Fungus hæmatodes of breast, 221  
 Gangrene, 50  
     —, dry, of skin, 96  
     —, from bite of viper, 80  
     —, senile, 84  
 Gangrenous inflammation after operations, 42  
 Hemiplegia, 153  
 Hemorrhage, source of danger in operations,  
     34, 220  
 Hemorrhagic tendency, 36  
 Hemorrhoids, 111, 306  
     —, operations for, 314  
     —, symptoms, 308  
     —, treatment, 312  
 Hip-joint, diseases of, 271  
     —, treatment of, 288, 290  
     —, dislocation of from disease, 274  
     —, primary ulceration of the cartilages  
         of, 282  
     —, scrofulous disease of, 276  
     —, symptoms of, 277  
     —, treatment of, 292  
 Hospital gangrene, 78  
 Hysteria, local symptoms arising from, 259  
     —, pathology of, 260  
 Hysterical affection of the breast, 255  
     —, affections from local injury, 256  
     —, of the joints, 247  
     —, local, connected with  
         accidental injury, 256  
     —, treatment of, 265  
     —, aphonia, 254  
     —, paralysis, 164  
     —, retention of urine, 254  
     —, tetanus, 256  
     —, tympanitis, 255  
 Illustration of some important circumstances  
     connected with operative surgery, 31  
 Inflammation after operations, 39  
     —, of veins, 42, 103  
 Injury, effects of local, 58  
 Introductory discourse, 17  
 Issue, mode of making, 68  
 Joints, nervous affections of, 233, 247  
 Leech, death from bite of, 33  
 Leg, mortification of integuments of, 94  
     —, ulcers of, with varicose veins, 111  
 Local hysterical affections connected with  
     accidental injury, 256  
     —, nervous affections, 232  
 Lymphatic glands, caustics to, 70  
 Malignant diseases, caustics to, 76  
     —, tumours in nose, 141  
 Maxillary antrum, collection of transparent  
     fluid in, 341

- Maxillary antrum, diseases of, 336  
 ———, inflammation of, 337, 338  
 ———, malignant tumours of, 343  
 ———, polypus of, 342  
 Mercurial inunction, 230  
 Mercury, cases of syphilis in which it is not proper, 231  
 ———, its use in syphilis, 223  
 ———, sometimes acts as a poison, 227  
 Morbid growths, caustic to, 70  
 Mortification, 50  
 ——— from animal poisons, 79  
 ——— arteritis, 82  
 ——— caustics, 67  
 ——— cold, 81  
 ——— contusions and traumatic gangrene, 64  
 ——— dry, of skin, 96  
 ——— from ergot of rye, 98  
 ——— heat, 78  
 ——— inflammation, 51  
 ——— pressure, 61  
 ——— senile, 84  
 ——— from strangulation or ligature, 59  
 ——— sudden loss of blood, 82  
 ——— of extremities, from unknown causes, 98  
 Musket balls in the body, 178  
 Needles in the body, 179  
 Nerves, division of, for cure of hysterical diseases of extremities, 267  
 Nervous affections, local, 232  
 ——— pains, character of, 239  
 ——— system, shock to, in operations, a cause of fatal results, 37  
 ———, disturbed state of, from operations, 47, 48  
 Neuralgia, 298  
 Nitric acid, mode of using as a caustic, 71  
 Nævi, caustics to, 71  
 Nose, polypi of, 135  
 ———, malignant tumours in, 141  
 Nostrils, foreign bodies in, 167  
 Oesophagus, nervous affection of, 241  
 Operations, ill consequences of, 31, 39  
 ———, the accidents which may happen, should be previously well considered, 33  
 ———, the existence of organic disease in a vital organ, an objection to, 49  
 ———, treatment of patients after, 41  
 Operative surgery, the results of, 31  
 Operator, what constitutes an accomplished, 32  
 Paralysis, 152  
 ———, causes of, 153  
 ——— in children, 166  
 ——— of one side of the face, 164  
 Paraplegia, 154  
 Pins in the body, 179  
 Polypi of nose, 135  
 ———, diseases sometimes mistaken for, 143  
 ———, fleshy, 138  
 ———, soft, 135  
 Prolapsus of rectum, 318  
 ———, treatment of, 319  
 Ptosis, 166  
 Ramollissement of spinal cord, 155  
 Ranula, 150  
 Recto-vaginal communication, 335  
 Rectum, abscesses in vicinity of, 184  
 ———, excrescences of, 320  
 ———, foreign bodies in, 173, 175  
 ———, prolapsus of, 318  
 ———, malignant diseases of, 331  
 ———, stricture of, 325  
 ———, unusual form of, 330  
 ———, ulcer on inside of, 324  
 Schneiderian membrane, malignant tumour from, 142  
 ———, polypus of, 135  
 ———, thickening of, 143  
 Scirrhus tumour of breast, 214  
 ———, propriety of operating for, 214, 220, 222  
 ———, two classes of, 215  
 Scrofulous disease of the hip, 276  
 Secondary abscesses, 45  
 Senile gangrene, 84  
 ———, causes of, 85  
 ———, symptoms of, 87  
 ———, treatment of, 89  
 Skin, dry gangrene of, 96  
 Sloughing, 50  
 ——— stump, 42  
 Sphincter ani, preternatural contraction of, 322  
 Stomach, foreign bodies in, 172  
 Stricture of rectum, 325, 330  
 ——— sigmoid flexure of the colon, 328  
 Surgical operations, dangers of, 31, 33, 39, 324  
 Synovial membrane, inflammation of, 272  
 ———, treatment of, 290  
 Syphilis, propriety of administering mercury in, 223  
 Tabes dorsalis, 155  
 Tetanus from operations, 46  
 Thirst, nervous, 245  
 Tic douloureux, 298  
 ———, treatment of, 302  
 Toes, mortification of, 84  
 Tongue, diseases of, 145  
 ———, dyspeptic, 145  
 ———, malignant diseases of, 148  
 ———, non-malignant tumour of, 147, 151  
 ———, ulcers of, 145  
 Tonsils, fish-bones in, 170  
 Tourniquet, amputations should not be performed without, 35  
 Trachea, foreign bodies in, 181  
 Traumatic delirium, 47  
 Tumours, fatty and steatomatous, 199  
 ———, half malignant, 73  
 ———, sero-cystic, of breast, 206  
 Tympanitis, hysterical, 255, 256  
 Ulcer on inside of the rectum, 324  
 Ulcers, varicose, 120  
 Urine, hysterical retention of, 254  
 Varicocele, 111  
 Varicose veins and ulcers of the legs, 111  
 Veins, inflammation of, 103  
 ———, after operations, 42  
 ———, remote effects of, 107  
 ———, symptoms of, 105  
 ———, varicose, 110  
 Viper, effects of bite of, 80  
 Ward's paste in hemorrhoids, 312, 325



---

SURGICAL OBSERVATIONS  
ON THE  
DISEASES OF THE JOINTS.

---





PATHOLOGICAL  
AND  
SURGICAL OBSERVATIONS  
ON THE  
DISEASES OF THE JOINTS.

BY

SIR BENJAMIN C. BRODIE, BART., F. R. S.

SERGEANT-SURGEON TO THE KING, SURGEON TO ST. GEORGE'S  
HOSPITAL, AND AUTHOR OF DISEASES OF THE  
URINARY ORGANS, &C.

FROM THE FOURTH LONDON EDITION, WITH THE AUTHOR'S  
ALTERATIONS AND ADDITIONS.

---

PHILADELPHIA :  
LEA AND BLANCHARD.  
1847.

12 1/2 10729

100

100

MERRIAM AND COOKE, PRINTERS,  
WEST BROOKFIELD, MASS.

100 100 100 100



# PREFACE

TO THE

FOURTH EDITION.

---

SINCE this treatise was first offered to the public, I have had considerable opportunities of obtaining information on the subjects to which it relates, and of these I have endeavoured to avail myself, as far as it was in my power to do so, amid the interruptions occasioned by the various other pursuits in which I have been engaged. I have thus been enabled, in the latter editions, to describe several forms of disease, with which I was formerly unacquainted; to give a more complete and exact history of the symptoms by which the different diseases of the joints are indicated in the living person; and to suggest (as I hope) more efficient modes of practice with a view to their relief or cure. If I am not much mistaken, it is in this last respect that the observations contained in the present volume will be found to differ most from those which were the result of my earlier investigations. As I have become more versed in the practical duties of my profession, so I have become more convinced that local diseases, in the strict sense of the term, are of comparatively rare occurrence; and that those, which are usually regarded as being of this description, may, for the most part, be traced to a morbid condition of the general system. The local treatment of the diseases of the joints, which I now recommend, is even more simple than that which I recommended formerly; but it is quite otherwise with respect to those reme-

dies, which operate through the medium of the constitution. Experience has not only confirmed me in the opinion that remedies of this class may often be employed with great advantage to the patient, but has also taught me that there are few cases, in which a cure can be easily obtained without them.

There are some points connected with the pathology of the joints, respecting which others, whose knowledge and discernment I cannot too highly estimate, have been led to form opinions different from those which I had myself adopted, and which I still believe to be correct; and on one of these I have ventured to offer some remarks in a note at the end of this volume. Nothing, however, can be farther from my intention than to enter into any controversial discussion on these subjects. I have endeavoured, accurately and faithfully to record the facts, which have fallen under my observation; and in the advancement of knowledge, time cannot fail to show how far the conclusions, at which I have arrived, are well founded. I trust that I have sufficient love of science to lead me to desire nothing so much as the attainment of truth; and that I am not so vain as to believe that none of my views can be erroneous. Indeed, one principal result of my labours has been to convince me that life is not long enough for these difficult researches; that the utmost which can be accomplished by the zeal and industry of an individual is to make such progress in the study of pathology as may enable those who come after him to carry their inquiries farther; and that the expectations of any one who aims at higher objects than these must terminate in disappointment.





## CHAPTER VI.

## ON CARIES OF THE SPINE.

SECT. I. Pathological Observations, - - -	- 117
SECT. II. On the Symptoms of Caries of the Spine, - - -	- 125
SECT. III. On the Treatment, - - -	- 133

## CHAPTER VII.

## ON TUMOURS AND LOOSE CARTILAGES IN THE CAVITIES OF THE JOINTS, 136

## CHAPTER VIII.

## ON MALIGNANT DISEASES OF THE JOINTS, - - - - 141

## CHAPTER IX.

## ON SOME OTHER DISEASES OF THE JOINTS, - - - - 145

## CHAPTER X.

## ON INFLAMMATION OF THE BURSE MUCOSÆ.

SECT. I. History and Symptoms of this Disease, - - -	- 159
SECT. II. On the Treatment, - - - - -	- 161
SECT. III. Cases, - - - - -	- 163

## NOTE.

On Ulceration of the Articular Cartilages, - - - -	- 165
--	-------



## INTRODUCTION.

THE following pages contain a series of observations, which were begun several years ago, and which have been continued, not without considerable labour, up to the present period. They relate to a class of diseases which have strong claims on the attention of the surgeon; since they are of very frequent occurrence; are a source of serious anxiety to the patients; and for the most part, if neglected, proceed to an unfavourable termination. There are other circumstances, also, which seem to render the morbid affections of the joints a fit subject of investigation. They have scarcely met with the attention which they merit from former pathologists. The terms, white swellings, scrofulous joints, &c., have been used without any well-defined meaning, and almost indiscriminately; so that the same name has been frequently applied to different diseases, and the same disease has been distinguished by different appellations. Confusion with respect to diagnosis always gives rise to a corresponding confusion with respect to the employment of remedies; and hence I was induced to hope, that if it were possible to improve our pathological knowledge of the diseases to which I have alluded, this might lead, not indeed to the discovery of new methods of treatment, but to a more judicious and scientific application of those which are already known, and consequent improvement of chirurgical practice.

The joints, like the other animal organs, are not of a simple and uniform, but of a various and complicated structure. Although, in the advanced stages, the diseases to which they are liable extend to all the dissimilar parts of which they are composed, it is to be presumed that such is not the case in the beginning. We cannot doubt that here, as elsewhere, the morbid actions commence sometimes in one, and sometimes in another texture; and that they differ in their nature, and are variously modified, and, of course, require to be differently treated, according to the mechanical organization, and the vital properties of the part in which they originate.

It was under the influence of these impressions that I endeavoured to pursue my inquiries into the subject of the present treatise. Believing that nothing has contributed in a greater degree towards the modern improvements in surgery, than the practice of investigating by dissection the changes of anatomical structure which disease produces, I availed myself of every opportunity which occurred of mak-

ing such examinations. In particular, I was anxious to do this where the morbid changes were still in an early stage, and where I had the opportunity of noting the symptoms by which the incipient disease was indicated; and the knowledge which was thus acquired became the basis of my future observations. In laying the results before the public, I cannot be otherwise than conscious, that these researches are still imperfect. But I feel assured, at the same time, that those who are engaged in the study of pathology, will make due allowance for the difficulties which belong to this most complicated of all the sciences, and will not be disposed to criticise my labours severely, because they find that there is still an ample space left for those who may be willing to engage in similar inquiries.

Some of my readers will recognize in the present work the substance of three papers, which have been published in the fourth and two subsequent volumes of the *Medico-Chirurgical Transactions*; but they will also find a considerable proportion of new matter. I have met with no reasons for altering my former arrangement of those affections of the joints which are of most frequent occurrence. Indeed, it has been to me a source of much satisfaction, that all my subsequent observations, founded on numerous additional cases and dissections, have tended to confirm the accuracy of those pathological views which I was led to adopt several years ago, and which I ventured to bring forward in the first of those papers to which I have alluded.



## CHAPTER I.

### ON INFLAMMATION OF THE SYNOVIAL MEMBRANES AND JOINTS.

---

#### SECTION I.

##### PATHOLOGICAL OBSERVATIONS.

THE soft parts, which, added to the bones and cartilages, constitute the structure of the joints, are, the synovial membranes, by which the lubricating fluid is secreted; the ligaments, by which the bones are connected to each other; and the fatty substance, which occupies what in certain positions would otherwise be empty spaces. It is to be supposed, that the adipose membrane belonging to the joints may be inflamed; that it may be the seat of abscesses and tumours, as well as that which is situated beneath the skin or in the interstices of the muscles; and the ligaments cannot be regarded as more exempt from disease than the fibrous membranes, which they very nearly resemble in their texture. It is not improbable that some of the pains which take place in the joints in syphilitic affections may depend on a diseased action occurring in the ligaments; and there can be no doubt that the long continued symptoms, which occasionally follow a severe sprain, depend on these same parts being in a state of slow inflammation, in consequence of some of their fibres having been ruptured, or over-stretched. I cannot say that I have never seen a case where disease, independently of these causes, has originated in the ligaments; but I certainly have never met with a case where it has been proved to have been done by dissection; and it may be safely asserted, that this is a rare occurrence, and not what happens in the ordinary diseases to which the joints are liable.

On the other hand, no part of the body is much more frequently diseased than the synovial membranes. This is what their anatomical structure and functions might lead us to expect, since we find that living organs are more subject to have their natural functions deranged, in proportion as they are more vascular, and as they are employed in a greater degree in the process of secretion.

The synovial membranes of the joints have not been well described

by the majority of the old, nor even of modern anatomists. A sufficiently accurate account of them, however, has been published by Dr. W. Hunter, in a communication to the Royal Society, on the structure of cartilage, published in the forty-second volume of the Philosophical Transactions, and since then by M. Bichat, in his *Traité des Membranes*; and to these authors I may refer those of my readers who wish to see their anatomy more fully explained. At present it is sufficient for me to observe, that the office of the synovial membrane of a joint is to secrete the synovia, by which the joint is lubricated; that it lines the ligaments, by which the bones are held together; covers the bones themselves for a small extent, taking the place of the periosteum; and that from thence it passes over the cartilaginous surfaces, and the interarticular fat. Where it adheres to the bones and soft parts, it very much resembles the peritonæum in its structure, and possesses considerable vascularity; but where it is reflected over the cartilages it is thin and readily torn: its existence, however, even here, may be always distinctly demonstrated by a careful dissection. The synovial membrane of a joint forms a bag, having no external opening; in this respect resembling the peritonæum, the pleura, and the pericardium: which it also resembles in its functions, and to which it bears some analogy in its diseases.

Cases occasionally (but not often) occur, in which a joint is swollen from a preternatural quantity of fluid collected in its cavity, without pain or inflammation. This may be supposed to arise, either from a diminished action of the absorbents, or an increased action of the secreting vessels. The disease may be compared to the dropsy of the peritonæum or pleura; or, more properly, to the hydrocele; and it has been not improperly designated by the terms "*Hydarthrus*," and "*Hydrops articuli*."

It more frequently happens that there is swelling from fluid in a joint, with inflammation and pain. Here we may presume that the disease consists in an inflammation of the synovial membrane, with a consequent increase of the secretion from its surface; and I have found this opinion to be confirmed by the appearances observed in many such cases, in which I had the opportunity of examining the affected parts after death.

In some instances, while there is still pain and inflammation in the joint, the fluid is felt indistinctly, as if a considerable mass of soft substance lay over it. Often, when the inflammation has subsided, and the fluid is no longer to be felt, the joint remains swollen and stiff; painful, when bent or extended beyond a certain point, and liable to a return of inflammation from slight causes. The appearances observed on dissection, in the following cases, seem to throw light on this subject.

#### CASE I.

A middle-aged man was admitted into St. George's Hospital in September, 1810, on account of a disease in one knee. The joint



was swollen and painful, with slight stiffness, and with fluid in its cavity. The swelling extended some way up the anterior part of the thigh, behind the lower portion of the extensor muscles. It subsided under the use of blisters and liniments. Two months after his admission into the hospital, he was seized with a fever, apparently unconnected with the disease in the knee, of which he died. On examining the affected joint, the synovial membrane was found more capacious than natural, so that it extended up the anterior surface of the femur at least an inch and a half higher than under ordinary circumstances. Throughout the whole of its internal surface, except where it covered the cartilages, the membrane was of a dark red colour; the vessels being as numerous and as much distended with blood, as those of the tunica conjunctiva of the eye in a violent ophthalmia. At the upper and anterior part of the joint, a thin flake of coagulated lymph of the size of a half-crown piece was found adhering to the inner surface of the synovial membrane. There was no other appearance of disease, except that at the edge of one of the condyles of the femur the cartilage adhered to the bone less firmly than usual.

## CASE II.

A. B., a young man in the spring of the year 1808, in consequence (as he supposed) of exposure to damp and cold, became affected with a painful swelling in one of his knees. Under the treatment employed by the practitioner whom he consulted, the pain and swelling in great measure, but not entirely, subsided. Three months after the disease first took place, he was admitted into St. George's Hospital. At this time the knee was swollen, painful, and tender. The swelling had the form of the articulating ends of the bones. The leg was confined to nearly the straight position, and admitted of very little motion on the thigh. His general health was unaffected.

Blood was taken from the knee by cupping; and afterwards it was rubbed daily with mercurial ointment and camphor. The pain and inflammation subsided; and the swelling and stiffness were in some measure lessened. It afterwards became necessary to amputate the limb on account of another disease. The operation was performed on the 15th of December, 1808, and I did not neglect the opportunity of examining the joint.

The bones, cartilages, and ligaments were in a natural state. The synovial membrane was increased in thickness to about one-eighth of an inch, and was of a gristly texture. It was closely attached to the surrounding cellular membrane and fascia by means of coagulated lymph, which had been formerly effused on its external surface.

## CASE III.

A middle-aged man, who laboured under an organic disease of the liver, was admitted into St. George's Hospital on the 19th of December,

1821, on account of a painful swelling of one knee. Blood was taken from the knee by cupping, and afterwards blisters were applied. The affection of the knee was much relieved under this treatment, but the joint remained rather larger than natural, and somewhat stiff. The disease in the liver continued to make progress, and the man died on the 11th of February, 1822. On examining the body after death, the synovial membrane of the knee was found slightly thickened, and of a gristly structure. The vessels on its inner surface were more loaded with blood than under ordinary circumstances. The cartilage covering that portion of the articulating extremity of the femur which corresponds to the patella, in one spot of about three quarters of an inch in diameter, presented an irregular surface, as if it had been partially absorbed, but not to a sufficient extent to expose the surface of the bone below.

---

These cases seem to explain the usual consequences of inflammation of the synovial membrane. It occasions, 1st, a preternatural secretion of synovia; 2dly, effusion of coagulated lymph into the cavity of the joint; 3dly, in other cases, a thickening of the membrane; a conversion of it into a gristly substance; and an effusion of coagulated lymph, and probably of serum, into the cellular texture by which it is connected to the external parts.

I have seen several cases where, from the appearance of the joint, and other circumstances, there was every reason to believe that the inflammation had produced adhesions, more or less extensive, of the reflected folds of the membrane to each other; and I have observed occasionally, in dissection, such partial adhesions as might reasonably be supposed to have arisen from inflammation at some former period.

The slight adhesion of the cartilage to the bone, in the first of the cases, which have been related, and the partial absorption of the cartilage in the last case, we must suppose to have been the consequence of the greater disease in the synovial membrane. In another case, in which the patient, having recovered of inflammation of the synovial membrane, died several months afterwards of another disease, I found, on dissection, that the greater part of the cartilage of the patella, and a small portion of that covering the condyles of the femur, had disappeared, and that its place was occupied by a thin yellow membranous substance adhering to the bone, and forming a distinct cicatrix. I have known many cases in which there was extensive destruction of the cartilages of a joint by ulceration, manifestly arising from neglected inflammation of the synovial membrane. That this should happen is no more remarkable than that ulcer of the cornea should occasionally be induced by inflammation of the *tunica conjunctiva* of the eye. This termination of the disease is not uncommon in the labouring classes of society, who frequently do not obtain proper surgical assistance during the existence of the earlier symptoms. Among others it is comparatively rare; and on the whole I



believe it will be found in the majority of cases of caries of the joints, that the disease has begun in the harder textures.

Inflammation of the synovial membrane occasionally terminates in suppuration, without having induced ulceration of either the soft or hard textures of the joints. I found this to have happened in the case of a patient who died in consequence of a small wound, which had penetrated into the elbow, the joint being full of pus, although there was no ulcerated surface. The same thing occasionally occurs where the inflammation has not had its origin in a mechanical injury; but the fact can be ascertained only where an opportunity occurs of examining the parts immediately after suppuration is established, as ulceration of the cartilages soon follows the formation of an abscess under such circumstances, in an articular cavity.

There is a peculiar morbid state of the system, which, in some instances, follows severe accidents, or operations, and which is well known to surgeons who are engaged in the practice of the London Hospitals, in which the patients are liable to deposits of pus in various parts of the body, at a distance from the seat of the original injury. These deposits not unfrequently take place in the cavities of joints, as a consequence of inflammation of the synovial membrane, and independently of ulceration. Several examples of the kind have fallen under my own observation; but it will be sufficient for me to refer to those which have been recorded by the late Mr. Rose, and by Mr. Arnott, in the fifteenth volume of the *Medico-Chirurgical Transactions*.

In one of the cases related by Mr. Arnott, it is stated that the cavity of the knee-joint was filled with a "tolerably thick pus, of an uniformly reddish colour, as if from an admixture of blood." The following case affords a still more remarkable example of the secretions of an inflamed synovial membrane being tinged in the same manner.

#### CASE IV.

Henry Payne, thirty-nine years of age, was admitted into St. George's Hospital, under the care of Mr. Hawkins, on the 7th of October, 1829.

He had suffered, formerly, from repeated attacks of rheumatism.

About twelve weeks ago, after exposure to damp and cold, he was seized with inflammation in nearly all his joints. In the course of a few days the disease in the other joints had abated, and the right knee became more painful and swollen. At the time of his admission, this knee was tender, painful, and much distended with fluid, and there was a good deal of febrile excitement of the system.

Blood was taken from the neighbourhood of the knee by cupping; and this was followed by the application of blisters. The *vinum colchici*, and afterwards calomel, combined with opium, were administered internally. Under this treatment the pain and swelling of the knee subsided.

On the 27th of October, he was attacked with severe inflammation of the fauces and larynx; which, however soon yielded to the remedies employed.

On the 31st, he complained of severe pain in the right side, with great difficulty of breathing; and on the 3d of November he died.

On examining the body after death, both pleuræ were found inflamed, and incrustated with lymph, and serum had been effused into that of the right side. The lungs, also, were inflamed, and some portions of them were in a state of gangrene. The heart was affected with hypertrophy, and the pericardium was inflamed with flakes of lymph adhering to it. The synovial membrane of the right knee was full of dark-coloured fluid; not purulent, but having the appearance of a thick synovia, tinged with blood. The synovial membrane was every where of a red colour, as if stained by this secretion, and the cartilages of the joint had the appearance of having been stained in the same manner. There were some small extravasations of blood in the cellular membrane external to the joint.

## SECTION II.

---

### ON THE CAUSE AND SYMPTOMS OF THIS DISEASE.

It is evident that inflammation may affect the synovial membrane of a joint by extending to it from some of the other textures of which the joint is composed, or that it may have its origin in the membrane itself. My present observations are intended to relate chiefly to cases of the latter description; and what little is to be said, in addition, respecting those of the former, will be better introduced hereafter.

Although no period of life is altogether exempt from this disease, it does not occur equally in persons of all ages. It very seldom attacks young children: becomes less rare in those who approach the age of puberty; and is very frequent in adult persons. This is the reverse of what happens with respect to some of the other diseases, to which the joints are liable; and a knowledge of these circumstances will be found of some importance to the surgeon, in assisting him to form a ready diagnosis.

Inflammation of the synovial membranes may take place, as a symptom of a constitutional affection, where the system is under the influence of gout or rheumatism; where it is disturbed by the operation of the syphilitic poison; where mercury has been exhibited improperly, or in too large quantities; and under a variety of other circumstances. But, in these cases, the disease, for the most part, is not very severe; it occasions a preternatural secretion of synovia; but does not, in general, terminate in the effusion of coagulated



lymph, or in thickening of the inflamed membrane. Sometimes it attacks several joints at the same instant, and even extends to the synovial membranes which constitute the *bursæ mucosæ* and sheaths of the tendons. At other times it leaves one part to attack another, and different joints are affected in succession.

In other cases, the disease is entirely local; produced by a sprain or other injury; or the application of cold; and sometimes arising from no evident cause. The application of cold is, on the whole, the most frequent source of the complaint; and hence it is easy to explain, why it occurs much more frequently in the knee, than in any other joint; and why it is comparatively rare in the hip and shoulder, which are defended by a thick mass of muscles from the influence of the external temperature. Where the inflammation is thus confined to a single joint, it is more probable that it will assume a severe character, and that it may be of long duration. It is likely to leave the joint with its functions more or less impaired; and occasionally terminates in its total destruction. In itself it is a serious disease, but is often confounded, under the alarming name of white swelling, with other diseases, which are still more serious.

Inflammation may take place in the synovial membranes in different degrees of intensity; but for the most part it has the form of a chronic or slow inflammation; which, while it impairs, does not altogether destroy, the functions of the joint; and which, if not relieved in the first instance, by active and judicious treatment, may, like a chronic ophthalmia, continue for weeks or months, and with occasional recoveries and relapses, may even harass and torment the patient during many successive years.

In the first instance, the patient experiences pain in the joint, which, although it affects the whole articulation, is often referred principally to one spot, being there felt more severely than elsewhere. The pain usually continues to increase during the first week or ten days, when it is at its height. Sometimes even at this period the pain is trifling, so that the patient experiences but little inconvenience from it; at other times it is considerable, and every motion of the joint is distressing and difficult.

In the course of one or two days after the commencement of the pain, the joint may be observed to be swollen. At first, the swelling arises entirely from a preternatural collection of fluid in its cavity. In the superficial joints, the fluid may be distinctly felt to undulate, when pressure is made alternately by the two hands placed one on each side. When the inflammation has existed for some time, the fluid is less perceptible than before, in consequence of the synovial membrane having become thickened, or from the effusion of lymph on its inner or outer surface; and, in many cases, where the disease has been of long standing, although the joint is much swollen, and symptoms of inflammation still exist, the fluid in its cavity is scarcely to be felt. As the swelling consists more of solid substance, so the natural mobility of the joint is in a greater degree impaired.

The form of the swelling deserves notice. It is not that of the

articulating ends of the bones, and, therefore, it differs from the natural form of the joint. The swelling arises chiefly from the distended state of the synovial membrane, and hence its figure depends in great measure on the situation of the ligaments and tendons, which resist it in certain directions, and allow it to take place in others. Thus, when the knee is affected, the swelling is principally observable on the anterior and lower part of the thigh, under the extensor muscles, where there is only a yielding cellular structure between these muscles and the bone. It is also considerable in the spaces between the ligament of the patella and the lateral ligaments; the fluid collected in the cavity causing the fatty substance to protrude in this situation, where the resistance of the external parts is less than elsewhere. In the elbow the swelling is principally observable in the posterior part of the arm, above the olecranon, and under the extensor muscles of the fore-arm; and in the ankle it shows itself on each side, in the space between the lateral ligaments, and the tendons, which are situated on the anterior part. In like manner, in other joints, the figure of the swelling, whether it arises from fluid alone, or joined with solid substance, depends in great measure on the ligaments and tendons in the neighbourhood, and on the degree of resistance which they afford; and these circumstances, though apparently trifling, deserve our attention, as they enable us more readily to form our diagnosis.

In the hip and shoulder the disease occurs less frequently than in the superficial joints: and here the fluctuation of the effused fluid is not perceptible; but the existence of swelling is sufficiently evident beneath the muscles.

When the shoulder is affected, there is pain accompanied with a general tumefaction of the part; and, in most instances, if the hand be placed upon it, at the same time that the limb is moved, a crackling sensation is observed, which probably arises from an effusion of fluid into the cells of the neighbouring *hursæ*. After some time the swelling subsides, or the joint may even appear to be smaller than natural, in consequence of the muscles, especially the deltoid, having become waste from want of exercise.

When inflammation attacks the synovial membrane of the hip, there is an evident fullness of the groin, and, in some instances, of the nates also. There is pain, which is referred, not to the knee, as in cases of ulceration of the cartilages, but to the upper and inner part of the thigh, immediately below the origin of the *adductor longus* muscle. The pain is aggravated when the patient stands erect, and allows the limb to hang, without the foot resting on the ground. It is also increased by motion, but not by pressing the articulating surfaces against each other, so that it does not prevent the weight of the body being borne by the affected limb. The pain is often very severe, yet it does not amount to that excruciating sensation which exhausts the powers and spirits of the patient in some of the cases in which the cartilages of the hip are ulcerated. From some circumstances which have fallen under my observation, I cannot doubt that



inflammation of the synovial membrane of the hip occasionally terminates in dislocation of that joint. It is easy to understand how this happens, where the synovial membrane and capsular ligament are much distended and dilated, the round ligament being at the same time separated from one of its attachments by ulceration. The head of the femur is pushed outwards until it has passed beyond the bony margin of the acetabulum, when the action of the glutæi muscles draws it upwards, and causes it to be lodged on the dorsum of the ilium. An example of this kind of dislocation will be found among the cases which will be related hereafter.

After inflammation of the synovial membrane has subsided, the fluid is absorbed, and, in some instances, the joint regains its natural figure and mobility; but, in other cases, stiffness and swelling remain. Sometimes the swelling has the same peculiar form, which it possessed while the inflammation still existed, and while fluid was contained in the joint; and we may then suppose, that it depends principally on the inner surface of the synovial membrane having a thick lining of coagulated lymph. At other times the swelling has the form of the articulating extremities of the bones, that is, nearly the natural form of the joint; and it probably arises from the thickened state of the synovial membrane. From whichever of these causes it be that a swelling remains after the inflammation has subsided, the patient is very liable to a recurrence of the disease. Whenever he is exposed to cold, or exercises the limb in an unusual degree, and often, without any evident reason, the pain returns, and the swelling is augmented. In those cases in which the synovial membrane is thickened, although the fluid, which had been effused, is absorbed, and the principal swelling has disappeared, it occasionally happens, not only that a certain degree of inflammation still lingers in the part, but that it continues until the morbid action extends to the other textures; and ultimately ulceration takes place in the cartilages, suppuration is established, and there is complete destruction of the articulating surfaces. In this advanced stage, if we wish to know whether the inflammation of the synovial membrane, or the ulceration of the cartilages, has been the primary affection, we must form our judgment, not from the present symptoms but from the previous history of the case. It is, indeed, often difficult to procure a history on the accuracy of which we can rely, particularly in hospital practice; but this is of the less importance, as whatever the disease may have been in its origin, where it has proceeded so far as has been described, there is no difference respecting the treatment; and, for the most part, when suppuration has taken place, as the result of a chronic disease, and in combination with extensive ulceration of the cartilages, there is little prospect of advantage from anything, except the removal of the limb by amputation.

I believe that the above history will be found applicable to the majority of cases in which this disease exists. but I have before observed, that inflammation may exist in the synovial membranes in different degrees of intensity; and occasionally it will be found to be

more urgent in its symptoms, and to be more rapid in its progress, than what has been described, having the characters of an acute instead of a chronic inflammation. Under these circumstances, the swelling takes place immediately after, or at the same instant with, the first attack of pain: there is redness of the skin; the pain is more severe; and it is so much aggravated by the motion of the parts, that the patient keeps the joint constantly in the same position, and usually in an intermediate state between that of flexion and extension. In addition to these symptoms, there is more or less of symptomatic fever of the inflammatory kind. In a few days the disease, if left to itself, assumes the chronic form; or, perhaps under proper treatment, it subsides altogether.

It must be observed, however, that the boundaries of acute and chronic inflammation do not admit of being very well defined. These terms accurately enough express the two extremes; but there are numerous intermediate degrees of inflammation, of which it is difficult to determine whether they should be considered as being of the acute or chronic kind. On this, and on many other occasions, the pathologist must be content if he can succeed in pointing out the principal varieties of morbid action which occur, and the symptoms, which they produce, in such a manner as will enable others, with the assistance of a certain degree of original observation, to distinguish those nicer shades in the characters of disease, which language is inadequate to explain, but a knowledge of which is of considerable importance in medical and surgical practice.

It is to be supposed, that the character which inflammation of the synovial membrane assumes must in a great degree, depend on the peculiar constitution of the patient. It is, however, modified by a variety of other circumstances.

I have already observed, that the symptoms are, for the most part, more severe, and that there is a greater disposition to terminate in the effusion of coagulated lymph, and thickening of the synovial membrane, where the inflammation is strictly local, than where it is the result of some disease affecting the general system.

In syphilitic cases, it seldom happens that more than one or two joints are affected at the same time. In the early stage of syphilis, the inflammation is usually an accompaniment of a papular eruption or lichen. There is then but little pain; fluid is effused only in small quantity; and when this has become absorbed, the joint is restored, as nearly as possible, to its original condition. In the more advanced stage of syphilis, we find it existing in combination with nodes: and here it is productive altogether of much more inconvenience to the patient; is more difficult to be relieved; and the synovial membrane is left thickened, and the joint somewhat larger than natural, after the fluid has disappeared. In cases of the last description, it is often impossible to determine, whether the disease may with most reason be attributed to the agency of the syphilitic poison, or to the repeated exhibition of mercury.

In cases of rheumatism, several joints are frequently affected, ei-



ther at the same time, or in succession; and the synovial membranes which constitute the *bursæ mucosæ* and sheaths of the tendons, often participate in the disease. There is usually a good deal of pain and swelling, and the joints are often left stiff and enlarged afterwards. Where the inflammation is connected with gout, the pain is generally out of all proportion to the other symptoms of inflammation; and the patient compares his sensations to those, which might be supposed to arise if the joint were compressed by a vice, or if it were violently torn open.

There is a remarkable, yet not uncommon form of the disease, which may be considered as bearing a relation to both gout and rheumatism, but differing from them, nevertheless, in some essential circumstances. The synovial membrane becomes thickened, so as to occasion considerable enlargement of the joints, and stiffness, there being at the same time but little disposition to the effusion of fluid. In the first instance, the disease is often confined to the fingers; afterwards it extends to the knees and wrists; perhaps to nearly all the joints of the body. Throughout its whole course, the patient complains of but little pain; but he suffers, nevertheless, great inconvenience, in consequence of the gradually increasing rigidity of the joints, and the number which are affected in succession. The progress of the disease is usually very slow, and many years may elapse before it reaches what may be regarded as its most advanced stage. Sometimes, after having reached a certain point, it remains stationary, or even some degree of amendment may take place: I do not, however, remember any case in which it could be said that an actual cure had been effected. The individuals who suffer in the way which has been described, are, for the most part, those belonging to the higher classes of society, taking but little exercise, and leading luxurious lives: but there are exceptions to this rule; and the disease occasionally occurs in hospital practice,—in men and even in females, of active and temperate habits.

---

## SECTION III.

### ON THE TREATMENT OF THIS DISEASE.

IN cases in which inflammation of the synovial membrane is connected with rheumatism, those remedies may be employed with advantage, which are useful in relieving rheumatism in other textures; such as *opium* combined with *ipecacuanha*, or other diaphoretics; preparations of the *colchicum autumnale* and mercury. Of the two latter, I have found reason to believe that the *colchicum* is to be preferred, where several joints are affected, and where the synovial membranes, which constitute the *bursæ mucosæ* and sheaths of the

tendons, participate in the disease. In such cases, the wine of the root of *colchicum* may be administered in doses varying from 15 to 30 minims, three times daily, or, in some instances, the acetous extract of *colchicum* may be given in alterative doses of 2 or 3 grains every night. On the other hand, mercury is preferable where only one or two joints are affected at a time; but where there has been a manifest translation of the disease, either from some internal organ, or from one joint to another. The form of mercury most generally useful, under these circumstances, is that of calomel combined with opium; and it should be administered in such doses as to affect the gums, or to produce some other indication of its action on the general system.

In those cases in which the patient complains of an excruciating grinding pain, or of a sensation as if the joint were torn open, and in which I have already stated that the disease probably bears some relation to gout, the relief produced by the exhibition of *colchicum* is even more remarkable than in cases of rheumatism; being, in some instances, almost immediate, after leeches and other remedies have been employed to no purpose.

Where inflammation of the synovial membrane arises from syphilis, it will probably disappear under a well-regulated course of mercury; and where it seems to have arisen from the protracted or injudicious use of mercury, or from mercury acting on a peculiar constitution, sarsaparilla may be given with advantage. This last medicine is especially useful where the affection of the joints occurs in combination with diseases of the bones and periosteum.

In cases of that peculiar chronic disease, which is described in the concluding part of the last section, in which many joints, and sometimes nearly all the joints of the extremities are affected in succession, it is of importance that the greatest attention should be paid to the general health, so that it may be maintained in as good a state as possible. As long as he is capable of doing so, the patient should take sufficient exercise daily, to induce a moderate degree of perspiration; he should live on a simple diet, avoiding especially raw fruit and acids, and whatever is not of easy digestion; and taking fermented liquors only in small quantity. The bowels should be kept gently open by means of rhubarb, or compound decoction of aloes, or some other of the same class of aperients. It has appeared to me also, that in these cases, patients have derived benefit from the use of the acetous extract of *colchicum*, exhibited at intervals of six or eight weeks, for ten or twelve successive nights, in small or alterative doses; and still more from very long-continued use of alkalis. The carbonate of potash usually agrees with the stomach better than the pure potash. Ten or fifteen grains may be given twice daily, in the middle of the day and evening, and continued, with occasional brief intermissions, for many months.

In some of these cases I have known considerable improvement to take place under the use of an excellent medicine which has been long discarded from the London Pharmacopœia, although it is retained in



that of Dublin, under the name of *Aqua calcis composita*. Half a pint of this infusion may be taken daily for two or three successive months; then omitted for a short time, but taken again afterwards. It has been said that the hydriodate of potash also has been administered with advantage.

But our sole dependence must not be placed on what may be called specific remedies. The treatment employed in ordinary cases of inflammation is often sufficient to effect a cure, and ought in no case to be altogether neglected.

In the acute form of the inflammation, leeches may be applied in the neighbourhood of the part affected; and if there be much symptomatic fever, blood may be taken from the arm, and the bleeding may, or may not be repeated, according to circumstances. Attention should be paid to the state of the bowels, and saline draughts may be given with some diaphoretic medicines. If the swelling has rapidly risen to such a height as to occasion considerable tension of the soft parts, the pain will be best relieved by means of warm fomentations and poultices; but otherwise, cold evaporating lotions seem to produce a better effect. Under this treatment the acute inflammation of the synovial membrane is in general very speedily relieved.

The chronic inflammation is relieved more slowly. In the first instance, the joint should be kept in a state of perfect quietude. Blood should be taken from the part by means of leeches or cupping. The latter method is preferable; the sudden abstraction of blood, which can be thus effected, being more beneficial than the more gradual hæmorrhage which is procured by leeches. It will in general be right to repeat the blood-letting twice or three times, or even oftener; and in the intervals, compresses may be laid on the part, moistened with some cold lotion. When the inflammation has been in great measure subdued, a blister may be applied; and, if necessary, several blisters may be employed in succession, with more advantage than a single blister kept open by means of savine cerate. The blisters should be of a considerable size; and if the affected joint be deep-seated, they may be applied as near to it as possible; but otherwise, a blister is frequently of more service when applied at a little distance. For example, if the synovial membrane of the hip be inflamed, the blister may be placed on the groin or nates; and if the disease be in the wrist, it may be applied to the lower part of the fore-arm. The good effects of this treatment are soon manifest; in a few days the swelling, as far as it depends on fluid collected in the joint, is usually much diminished. Even when the tumour is solid, arising from the effusion of coagulated lymph, it will in a considerable degree subside, and sometimes be entirely dispersed, provided that the lymph has not yet become organized. Blisters are of more service, with respect to the removal of the swelling, than any other remedies; but they should not be employed without the previous abstraction of blood, except when the inflammation is slight, and when fluid is effused without any admixture of solid substances.

When I have seen the knee joint much distended, I have, in some

instances, ventured to evacuate the fluid by puncture; and the following is the result of my experience as to the effects of this operation:—

1st. In a thin person, if a few punctures be made with an instrument, a very little broader than a couching needle, by means of an exhausted cupping glass applied over the punctures, a large quantity of fluid may be easily abstracted without the smallest danger, and with no inconsiderable relief to the patient. But, while inflammation exists, the relief is not permanent, the fluid being rapidly regenerated; so that in a day or two, or perhaps in a few hours, the swelling is as large as ever. If, on the other hand, the inflammation be already subdued, the absorption of the fluid usually goes on so rapidly, that any more expeditious method of removing it is unnecessary. 2dly, if suppuration has taken place in the joint, (not in consequence of ulceration, but from the surface of the synovial membrane) a free opening made into it with the lancet will often be attended with the best effects. I shall have occasion to advert to this subject again hereafter.

When the inflammation is in great measure relieved, liniments, which irritate the skin, may be rubbed on twice or three times in the day. Most of the liniments in the Pharmacopœia are not sufficiently stimulating for this, nor indeed for other purposes. The *linimentum camphoræ compositum* may be employed pure; or the *linimentum saponis* may be made stronger by the addition of *liquor ammoniæ* and *tincture lyttæ*; and the powers of the *linimentum ammoniæ* may be augmented in the same manner, or by the addition of the *oleum terbinthinæ*. The following liniment is more stimulating than those in common use; and as its effects are more permanent, it seems to me, in many cases, to be productive of better effects with respect to the disease:—

Olei Olivæ ℥ iss.  
 Acidi Sulphurici ℥ iss.  
 Olei Terbinthinæ ℥ ss.  
 Fiat linimentum.

It may be used of this strength for the class of persons who apply at an hospital for relief; but for those of a higher class in society, in whom the cuticle is generally thinner, and the cutis more tender, the proportion of the sulphuric acid should be somewhat less. The effect of this liniment is to excite some degree of inflammation of the skin: the cuticle becomes of a brown colour, and separates in thick, broad scales; and the inflammation of the internal parts is relieved, on the same principle as by a blister. Another liniment, which is also very useful, is one frequently recommended, consisting of a dram (or more) of the *antimonium tartarizatum* mixed with an ounce of the *unguentum cetacei*. This produces a pustular eruption of the skin; which, like other eruptions of the same kind, runs its course, and, during a certain period of time, operates very beneficially by abstracting the inflammation from the other parts.

Stimulating plasters, such as the *emplastrum ammoniaci cum hy-*



*draggyro*, act on the same principle as stimulating liniments, and are useful under the same circumstances, but they are, on the whole, a less convenient application.

Issues and setons may be of some service in chronic cases, in abating the symptoms of inflammation of the synovial membrane; but they are more especially beneficial where there is reason to believe that a secondary disease has begun to exist in the form of ulceration of the cartilages; and of their use, under these circumstances, I shall have occasion to speak hereafter.

No other active remedies seem to be productive of much benefit. But a great deal may be accomplished by mere negative treatment. Not only in cases of inflammation of the synovial membrane, but in all other cases in which actual disease of a joint exists, the disease, whatever it may be, is kept up and aggravated by motion and exercise; and whatever means can be employed to keep the joint in a state of complete repose, will go far towards the production of a cure. In the early stage of acute inflammation of the synovial membrane, indeed, no interference on the part of the surgeon is necessary for this purpose; the pain which the patient experiences on every attempt made to use the limb being sufficient to prevent him from using it. But it is otherwise when the inflammation has in a great degree subsided. At this period the motion of the joint occasions little or no inconvenience at the time, although it invariably tends to aggravate the symptoms afterwards. It is difficult to persuade a patient thus situated to submit to a very rigid system of confinement; and if he should do so, there is always danger, in protracted cases, that his general health may suffer in consequence. It is important that he should not be altogether deprived of the opportunity of taking air and exercise, yet it is necessary that the affected joint should be kept in a state approaching as nearly as possible to one of complete repose. This double object may be attained by means of a proper bandage, applied so as to restrain the motions of the joint, at the same time that it makes no more than a moderate degree of pressure on it. As to the best mode of carrying this plan into execution, the surgeon must exercise his own judgment in each individual case. If the disease be far advanced, and there is danger of the cartilages being ulcerated, he will find it prudent to restrain the motion of the joint altogether, by the application of splints of pasteboard or leather,\* con-

\* Splints of leather are much superior to those made of any other material in cases of diseased joints. They should be made of thick cow-hide, prepared without any kind of grease. Being cut of a proper shape, they should be softened in hot (not boiling) water; then moulded to the joint, and retained by means of a bandage. When dry they may be lined with some other soft leather, on the inside of which, in cases of abscess, there may be placed another lining of oiled silk, or of muslin prepared with caoutchouc, to prevent their being injured by the discharge. As they exactly fit the part which they are intended to support, they are quite easy to be worn. They are readily removed and re-adjusted—and this is a great advantage, especially where there are open sinuses. I am indebted for this most excellent and useful contrivance, to Mr. Sparkes, Bandage-maker, of Conduit Street.

fined by a roller, or even by circular stripes of adhesive plaster on their outside. In other cases, the bandages, &c., recommended by Mr. Scott, in his ingenious work on the diseases of the joints, will be productive of the best results.\* There is a bandage which is very well suited to cases of this kind, which, in one part of its circumference, is composed of a stiff leather, elsewhere of an elastic material, and secured by a lace of buckles, so that it admits of being applied with any degree of tightness. If the seat of the disease be in the knee, there may be a single piece of leather adapted to the shape of the posterior part of the limb; if it be in the elbow, there may be a double piece of leather, one on each side, and thus the construction of it may be varied so as to adapt it to any of the other articulations. In some instances such support may be wanted, and the leather should be stiff and unyielding: extending a considerable way above and below the joint. In others, while little support is necessary, the leather may be more pliant, and it need not extend beyond the immediate neighbourhood of the part affected. Such a bandage is worn with the greatest comfort, and it fully answers the intended purpose. As it may be removed or applied by the patient's own hands, the use of it is quite compatible with that of the stimulating liniments which I have formerly mentioned.†

After inflammation of the synovial membrane has entirely subsided, if we find the joint with its mobility only in a slight degree impaired, we may very safely leave it to itself. Time, and the restorative power of the constitution, will complete the cure. But if there be considerable stiffness and thickening of the soft parts, a further application of blisters will be useful in promoting the absorption of the lymph which has been effused. I have also known much benefit to arise under these circumstances, from the use of *moxa* in the way recommended by the late Mr. Boyle; that is, the application of it being so managed, that the heat may penetrate into the soft parts, without making an eschar, and scarcely making a blister.

At a still later period, friction made by the hand, with starch or other fine powder, will be productive of great advantage.

Friction, however, should be employed with caution, as, when used too freely, it sometimes occasions a return of the inflammation. Whenever there is the slightest indication of this being the case, it should be omitted, blood should be taken from the part, and some time should elapse before the friction is resumed. Friction is sometimes productive of very essential benefit, but not unless it be em-

\* A very convenient mode of applying bandages in these cases is as follows:—Let it be supposed that the disease is in the knee. Circular stripes of leather spread with the *emplastrum plumbi* are to be applied round the joint, and extending some way above and below it; care being taken that a space is left for the patella, on which there ought to be as little pressure as possible. Over this a calico roller (four or five yards for an adult) may be applied, and over this again a few circular stripes of linen, spread with adhesive plaster, with another calico roller over the whole. A bandage of this kind, carefully adjusted, may not require to be changed for six or eight weeks, and is very convenient to the patient.

† Bandages of this kind are made by Shoobred and Co., in Jermyn Street; and by Sparks, in Conduit Street, London.



ployed to a considerable extent; that is, for two or three hours daily, and during a long period of time. It is, however, a remedy which is applicable only under certain circumstances. We must always bear in mind that friction is useful in relieving some of the effects of disease, but not disease itself; and those who recommend it without attention to this principle, in these and in other cases will often find it to be productive of very injurious consequences.

I have sometimes tried the effect of pumping hot water on a stiff joint, as recommended by Le Dran, and as now practised at some watering places. The blow of a column of water, falling from a height of several feet, produces considerable friction, even so as to excoriate the surface, with which are combined the relaxing powers of heat and moisture. This practice is certainly productive of benefit; but the observations just made apply to this as well as the other modes of producing friction.

Whenever friction is useful, the vapour bath is useful also. The joint may be alternately bent, and extended, rubbed and champooped, while it is in the bath, and a degree of force may be applied to it, under these circumstances, which it would be unsafe to employ otherwise. All these methods of treatment, however, require time, and the exercise of much patience; and whoever expects the stiffness consequent on a severe attack of inflammation of the synovial membrane to be speedily removed, will not fail to be disappointed. In some cases, where the inflammation has been unusually severe, or of unusually long continuance, complete ankylosis having taken place, no plan of treatment can be successful in restoring the motions of the joint, and the patient must submit to the inconvenience of a stiff joint ever afterwards.

---

The foregoing observations sufficiently explain the treatment to be pursued in ordinary cases of inflammation of the synovial membrane. Those which follow are intended to apply to the more rare cases, in which the disease proceeds rapidly to suppuration, and the destruction of the joint. However formidable such cases may be, they are much under the control of art so that the patient will in many instances recover, preserving the limb, but not the motion of the joint, which remains immovable.

If it be a question whether a collection of fluid in a joint be purulent or otherwise, it is prudent in the first instance, to make a puncture with a grooved needle. If it prove to be purulent, a free opening should then at once be made with a lancet in a depending situation. It is important that this operation should not be long delayed, lest the matter should make its way out of the joint in other directions, and form irregular sinuses among the neighbouring tendons and muscles. It is equally important that the opening should be sufficiently large to allow the matter to flow out spontaneously, without it being necessary to have recourse to pressure on the joint. If afterwards there be reason to believe that there is still a lodgment of mat-

ter in any part of the joint, or among the neighbouring soft parts, the original opening should be dilated, or the surgeon should avail himself of the first opportunity, which occurs, of making another opening in a convenient situation; and it will generally happen that several such operations will be required before the cure is completed.

But all this will be of little avail, unless the joint be kept in a state of the most complete immobility. At first we can do little more than support the limb on a pillow, and endeavour to impress on the patient's mind the necessity of his aiding our views in this respect. Afterwards we may with great advantage apply some kinds of splints: those made of leather being preferable to others. At the same time great attention should be paid to the state of the general health in all respects: saline medicines, or tonics, with mineral acids, being administered according to circumstances. Of course care must be taken to prevent costiveness; but on this, as on all other occasions, where perfect quietude is required, very active cathartics should be avoided.

Under this treatment we may expect to find the purulent discharge lessen by degrees, and at last cease altogether, as ankylosis becomes established. Before ankylosis is complete, the surgeon should endeavour cautiously and gradually to place the limb in that position which may be most convenient to the patient afterwards: thus, if the elbow be the seat of the disease, it ought, if possible, to be ankylosed in a state of flexion: or, if it be the knee, the leg should be nearly, but not quite, extended as the thigh. It will be sometimes necessary to apply splints of different forms at different periods. Where the knee has been affected, I have sometimes employed a wooden splint, consisting of two parts, one adapted to the posterior part of the thigh, the other to the posterior part of the leg, united by a hinge, and furnished with a long screw behind by means of which the relative position of the leg and thigh may be daily and almost imperceptibly altered.

It may be almost unnecessary to remark that the chance of recovery in these cases must vary very much, accordingly as one or another joint has been the seat of the inflammation. The rapid formation of matter within the unyielding capsule of the hip-joint is especially dangerous, on account of the urgent constitutional symptoms to which it gives rise, and also for this reason, that it is impossible to ascertain the exact nature of the mischief which exists, or, if it were ascertained, to relieve the patient by making an opening into the articular cavity. It is also reasonable to suppose that suppuration of the synovial membranes belonging to the complicated joints of the carpus and tarsus must be more dangerous than that of the synovial membrane of the more simple joints of the knee and elbow.



## SECTION IV.

## CASES OF INFLAMED SYNOVIAL MEMBRANE.

THE cases which I am about to relate will serve to illustrate the observations respecting the inflammation of the synovial membranes which I have already made; and also to explain some circumstances which will be found to occur in practice, and which could not have been well introduced in the general history of the disease contained in the preceding pages. Whoever will take the pains to compare these cases with each other, and with those which I shall relate hereafter, will, if I am not exceedingly mistaken, be convinced that the classification of the different diseases of the joints is not a mere matter of curiosity, which may be interesting to the morbid anatomist; but that these diseases are different in their progress; that they produce different symptoms, by which they may be distinguished from each other in the living person, and which indicate the employment of different remedies for their relief.

## CASE V.

John Adams, forty-seven years of age, on the 21st of August, 1811, was seized with a pain in his left knee, and in the course of a few hours he found the joint to be swollen. This was accompanied by a slight attack of fever.

On the 28th of August he was admitted into St. George's Hospital. At this time the knee was extremely painful and tender, and much swollen; the swelling not having the form of the articulating ends of the bones, but being most prominent on the anterior and lower part of the thigh, underneath the lower portion of the extensor muscles. The fluctuation of fluid might be distinctly felt within the synovial membrane.

Eight ounces of blood were taken from the knee by cupping. The loss of blood was immediately followed by an abatement of the pain; tenderness, and swelling. On the 30th of August a blister was applied.

The cupping was repeated on the 9th and 18th of September, and on the 4th of October; and each time was followed by the application of a blister.

On the 10th of October the joint was free from all pain and tenderness. It was stiff, and still slightly swollen; but no fluid was perceptible, the swelling appearing to arise entirely from solid substance. He was directed to use a stimulating liniment twice in the day.

On the 18th of October there had been no return of the inflammation, and the stiffness and swelling were diminished. Friction was now employed, by means of the hand, with starch powder, every morning and evening; and in a few days afterwards, it was directed, in addition to the friction, that hot water should be pumped on the joint, so as to fall on it from a height of several feet for half an hour every morning.

About the middle of November he was dismissed from the hospital; the joint being now nearly as small and as movable as before the inflammation had taken place.

### CASE VI.

Robert Stewart, eighteen years of age, was admitted into St. George's Hospital on the 26th of January, 1814.

He said that, about seven weeks before his admission, the right knee had become swollen and painful, without any evident cause. The pain and swelling took place about the same time. The pain was severe, and attended with some degree of fever. About a fortnight before his admission, the joint was cupped, and the swelling and pain became much diminished, and the leg more moveable. The cupping had been repeated on the day previous to his coming to the hospital, and again afforded him relief.

At the time of his being admitted into the hospital, the knee was still much swollen, the swelling extending up the anterior and lower part of the thigh under the extensor muscles; and it appeared to arise chiefly from solid substance effused within the articulation, very little fluid being to be distinguished. There was but little pain or tenderness; the joint admitted of a limited motion: he said it was less stiff than it had been a short time before.

On the 27th of January eight ounces of blood were taken from the knee by cupping, and afterwards a blister was applied.

On the 5th of February the blister was healed. The swelling was much diminished. The solid substance, which had been effused, was in great measure absorbed; so that the form of the articulating ends of the bones could be distinguished. The blister was repeated.

On the 18th of February the joint was scarcely larger than natural, but it was still stiff in a slight degree. The stiffness disappeared under the employment of friction with mercurial ointment and camphor, and on the 23d of February he was dismissed from the hospital as cured.

### CASE VII.

John Hannam, a stout middle-aged man, was admitted into St. George's Hospital, under Mr. Keate, on the 22d of May, 1811.

He said that, six years ago, he had wrenched his right knee,



which in a few hours became swollen and painful. In the course of a month the pain and the swelling subsided, and he returned to his duty as a soldier, in one of the regiments of Life Guards: but from that period he experienced what he termed a weakness of the joint; and he had a return of pain and swelling whenever he made any unusual exertion. A year and a half previously to his coming to the hospital, he was ill of a fever. From this time the knee was more swollen and painful; and he continued in this state, sometimes better, sometimes worse; so that he was unable to do his duty, and he was in consequence discharged from his regiment.

At the time of his admission the knee was swollen; partly from fluid in its cavity, partly from thickening of the soft parts. The swelling extended some way up the anterior part of the thigh, and was prominent on each side of the ligament of the patella. The joint was stiff, but admitted of an imperfect flexion and extension. He complained of some degree of pain when at rest; but the pain was more severe whenever he attempted to exercise the limb. There was an enlarged lymphatic gland in the groin.

The knee was cupped several times, and always with advantage. Blisters and stimulating liniments were employed, and about the end of September he left the hospital, better than when he was admitted; but there was still pain whenever he made any unusual exertion, and the joint was swollen and stiff, though in a less degree than formerly.

The swelling now appeared to arise altogether from solid substance, no fluid being perceptible.

Fifteen months afterwards, I had an opportunity of seeing the patient again. There was very little alteration in the state of the knee. He said that whenever he took more exercise than usual, or was exposed to cold, inflammation took place, and the swelling was increased; but that, by remaining for a short time in a state of quietude, these symptoms were always relieved.

---

The three preceding cases are sufficient to illustrate the ordinary characters, and the ordinary progress of this disease. Those which follow are intended to explain certain circumstances, which, although of less frequent occurrence, are occasionally met with, and which it is of much consequence for the surgeon to understand.

### CASE VIII.

A young gentleman, about 13 years of age, in July, 1817, was seized with inflammation of the synovial membrane of one knee, attended with the usual symptoms. Blood was taken from the knee by means of leeches and cupping, cold lotions were applied, and the violence of the inflammation subsided. In the beginning of October a blister was applied; and at the end of October the knee was in the

following state. It was larger than the other; the swelling having the form of the articulating extremities of the bones, and appearing to arise from a thickened state of the synovial membrane. The joint admitted only of a limited degree of motion, and the motion of it beyond a certain point was productive of pain. He was now directed to employ friction with a stimulating liniment.

The complaint continued very nearly in the same condition until the middle of November, when the swelling became suddenly reduced, and almost wholly disappeared. But on the same day he complained of an acute pain in his head, shooting from the temples to the forehead just above the eyebrow. This pain went off in a few hours, leaving only a slight soreness; and for several days it returned periodically, in the form of a nocturnal paroxysm, of great severity, but of only a few minutes' duration. Leeches and blisters were applied both to the head and legs; and purgatives were administered. At the end of a week the pain ceased; but he was seized with great somnolency, which was soon followed by strabismus, partial blindness, and almost total cessation of speech; and after remaining in this state about a week, he died.

The body was not examined.

#### CASE IX.

James Burton, forty years of age, was admitted into St. George's Hospital, on the 2d of June, 1813, labouring under a complaint of his left knee. He said that, two years ago, the joint became painful and swollen, at first in a slight degree, but afterwards the pain and swelling increased; and he observed that the symptoms were always aggravated on the coming on of cold or wet weather. For the last nine months he had been unable to use the joint sufficiently to enable him to attend to his usual occupations. Blisters and issues had been employed at various times, and, as he thought, with some temporary relief. At the time of his admission the knee was swollen, in consequence of fluid being collected within the cavity of the synovial membrane. The fluid might be distinctly felt to fluctuate underneath the patella when the two hands were placed, one on each side of the joint. The soft parts were somewhat, but not considerably, thickened. He had very little pain except on motion; was unable to bend the leg beyond the right angle, but could extend it completely. The swelling of the joint appeared greater than it really was, on account of the wasting of the muscles of the thigh and leg.

Blood was taken from the knee by cupping; and afterwards several blisters were applied in succession. He took five grains of the *pilula hydrargyri submurialis composita* every night. On the 2d of August a blister was applied, and kept open by dressing it with the savine cerate. At the end of three weeks he complained of pain, and a sense of irritation, extending up the thigh and down the leg. These symptoms were attributed to the open blister, and were immediately



relieved when the blistered surface was allowed to skin over. On the 20th of September he quitted the hospital, being free from all his former symptoms, except that there was still a slight degree of stiffness of the joint.

In the beginning of July, 1815, the same patient came again under my observation. At this time, both knees were distended with fluid; the right shoulder was swollen, but in a less degree; and there was a collection of fluid in the synovial membrane which forms the sheath of the tendons on the posterior part of each wrist. On examining the right knee, which was the most swollen of the two, a sensation was communicated to the hand, as if produced by a number of small loose substances, of a soft consistence, within the cavity of the joint, and just perceptible to the touch. The joints were moveable, and very little painful. He said that all these swellings had begun about three months after he formerly quitted the hospital, with a slight degree of pain, and had gradually increased.\*

I suspect the loose substances, which were felt within the knee in this case, to have been portions of coagulated lymph, which had been effused on the inner surface of the synovial membrane and afterwards had become detached; similar to those which are sometimes formed in the cavity of an inflamed *bursa mucosa*, and which I shall have occasion to describe hereafter. I had not the opportunity of observing the subsequent progress of the disease in this patient; and I have never been able to ascertain the correctness or incorrectness of this opinion, respecting these loose substances, by dissection. They are certainly of a different nature from the loose cartilages which are met with in other cases.

## CASE X.

Amy Brookes, fifty-four years of age, was admitted into St. George's Hospital on the 10th of June, 1818. Three years ago, her right knee became swollen and painful, and the pain and swelling had existed ever since, sometimes in a greater, sometimes in a less degree. At the time of her admission, the knee was much swollen, in consequence of fluid collected in its cavity. There was pain in the joint, which was aggravated by motion; but which was not sufficient to interfere with her rest at night, or to prevent her going about her usual occupations. On examining the knee, a sensation was given to the hand, as if some soft loose substance was formed within the

\* These cases are given as they stood in the former editions of this work, and they sufficiently illustrate the principal circumstances in the history of the disease. But it should be observed, with respect to some of them, (that of Burton and of Hannam, for example,) that the practice employed in St. George's Hospital for some years past would have been, after the inflammation had subsided, to apply pasteboard splints or bandages, so as to restrain the motions of the joint, and that there is no doubt that the recovery of the patients under this treatment would have been more rapid and more complete.

joint; and a crepitus was distinguished, on moving the patella from one side to the other.

During the time of her stay in the hospital, blood was taken from the knee twice by cupping, and once by leeches; and two blisters were applied. July 15th, she was discharged as cured; there was no pain nor swelling; the loose substance was no longer perceptible, and the crepitus could scarcely be distinguished.

The crepitus which was observed in this case, occurs in a few instances, and I know not positively to what cause it is to be attributed. It is different from that which I have met with, where there has been reason to believe that the cartilages are destroyed, so as to expose the bone underneath; and if this had been the cause of it, we must suppose that it would have been permanent, or at any rate, of longer duration. Probably it may have depended, in this case, on an effusion of albumen (coagulated lymph,) or on the synovia having been secreted of a different quality from what is usual.

The following case affords an example of inflammation of the synovial membrane of the hip terminating in dislocation.

#### CASE XI.

Master L., being at that time about eight years of age, was attacked, towards the end of September, 1824, with what was believed at the time to be inflammation of one of the parotid glands, attended with a good deal of fever. After six or seven days, and apparently in consequence of the application of cold lotions to the cheek, the inflammation left the parotid gland, and attacked one shoulder and arm; and at the end of two or three days more it left the shoulder and attacked one of the hips. For six or eight weeks he suffered most severely from pain referred to the inside of the thigh, extending from the pubes as low down as within two or three inches of the inner condyle of the femur, and attended with a great deal of fever. There was no pain in the knee. The surgeon who was then in attendance, applied leeches to the hip, lotions, &c., and afterwards made an issue with caustic behind the great trochanter. The fluctuation of fluid was perceived at the posterior point of the hip, and it was supposed that an abscess had formed. However, no puncture was made, and the fluid gradually became absorbed. In March, 1825, Master L., was sufficiently recovered to be able to walk about; but it was discovered that the limb was shortened. In November, 1825, I was consulted respecting him. At this time there were all the marks of a dislocation of the hip upwards and outwards. The limb was shortened, the toes turned inwards, and the head of the femur was distinctly to be felt on the posterior part of the ilium above the margin of the acetabulum.

The following case furnishes an example of a disease, which, as far as I know, has not been described by any pathological or surgical writer. One of the most remarkable symptoms which the disease



produces is an inflammation of the synovial membranes; for which reason it is to be regarded as connected with the present subject, and may be properly introduced in this place.

### CASE XII.

A gentleman forty-five years of age, in the middle of June, 1817, became affected with symptoms resembling those of gonorrhœa. There was a purulent discharge from the urethra, with *ardor urinæ* and chordee. On the 23d of June he first experienced some degree of pain in his feet. On the 24th the pain in the feet was rather increased, but not in a sufficient degree to prevent his walking four miles. There was some appearance of inflammation of his eyes.

June 25th, the pain in his feet was more severe; the *tunicæ conjunctivæ* of his eyes were much inflamed, with a profuse discharge of pus.

These symptoms increased in violence, the pulse varying from 80 to 90 in a minute; the tongue being furred; and the patient being restless and uncomfortable during the night. The whole of each foot became swollen; there was inflammation of the synovial membranes of the ankles; and it appeared to me that the affection of the feet themselves arose from inflammation of the synovial membranes belonging to the joints of the tarsus metatarsus, and toes. He said that he could compare the pain, which he experienced, to nothing else than that which might be supposed to arise from the feet being squeezed in a vice.

On the 27th of June the left knee became painful, and on the following day the synovial membrane of this joint was found exceedingly distended with synovia. He was now completely crippled; compelled to keep his bed, and scarcely able to vary his position in the smallest degree without assistance. The inflammation of the eyes and urethra was somewhat abated.

June 30th, The inflammation of the eyes and urethra had much subsided, and the purulent discharge was diminished. The pains of his joints were less severe; and the feet were less swollen. On the following day the knee was less swollen also.

He continued to mend, and on the 10th of July the swelling of the feet was still farther diminished, and that of the knee had almost wholly disappeared. His pulse continued to vary from 80 to 90 in a minute, and his tongue was still furred. He had pain in the feet and knee, but less severe than formerly, and he was restless at night.

July 13th, he complained, of pain in the right knee, and on the following day there was pain also of the right elbow and shoulder.

The right knee afterwards became swollen from fluid within the cavity of the synovial membrane, but not in the same degree with the other knee, and the swelling soon subsided. There was never any perceptible swelling of the shoulder and elbow.

August 1st, all his pains were abated. The eye and the urethra

were nearly free from inflammation, and the purulent discharge were scarcely perceptible.

August 5th, he was free from pain except on motion; the joints, which had been affected, were stiff; but he was able to move about on crutches.

From this time he progressively mended. The stiffness of the joints diminished very slowly; but he was free from all uneasiness. He was longer in recovering the use of the shoulder than that of the other joints.

In the following December, 1817, (at which time he had nearly, but not completely, recovered the use of his limbs,) he had another attack of the complaint. The symptoms were the same as formerly, taking place in the same order, and pursuing the same course, but with a much less degree of violence. This second attack lasted about six weeks; and left him again considerably crippled.

In March, 1818, he became affected with an ophthalmia, but of a different nature from that which he laboured under in the preceding summer. The inflammation was seated in the proper tunics of the eye; and it appeared probable that it would speedily have terminated in adhesions of the iris, and destruction of the powers of vision, if its progress had not been arrested by repeated blood-lettings and the use of mercury. He had another attack of ophthalmia of the same kind four years afterwards (1822.)

In order that the history of the disease might be rendered as simple as possible, I have described the symptoms in this case without hitherto adverting to the treatment which was employed.—Leeches, and blisters to the knee; liniments rubbed on the knees and shoulders; and fomentations when there was severe pain, formed the principal topical remedies. Of the various medicines which were exhibited, none seemed to be productive of benefit, with the exception of the *vinum colchici*. It was under the use of this medicine, that not only the pains and swellings of the joints, but that even the purulent inflammation of the eyes and urethra first began to subside; and I am, on the whole, inclined to believe that my patient was indebted to it for a much more speedy recovery than he would have obtained otherwise.

---

I have had the opportunity of seeing many other cases, in which a similar train of symptoms took place.

One gentleman (at the time when these notes were taken) had suffered from as many as nine attacks of this complaint. The first took place when he was under twenty years of age, and the others at various intervals in the course of the next twenty years. In one of them the first symptom was inflammation of the urethra, attended with a discharge of pus, although, from particular circumstances, he could not believe that he had been exposed to the risk of infection. This was followed by purulent ophthalmia, and that by inflammation of the synovial membranes. In three of the attacks, a purulent ophthalmia



was the first symptom; which was followed by inflammation and discharge from the urethra; and then the synovial membranes became affected: and in the other four attacks, the affection of the synovial membranes took place without any preceding inflammation either of the eye or urethra. The disease was not confined to the synovial membranes of the joints, but those of the *bursæ mucosæ* were inflamed also. In some of the attacks, the muscles of the abdomen were painful and tender, and subject to spasmodic contractions; and there was an occasional impediment to breathing, which seemed to arise from a similar affection of the diaphragm. The acute form of the disease, in this case, lasted from six weeks to three months, but nearly a year generally elapsed before the use of the limbs was perfectly restored. He had an attack in July, 1817; and in the beginning of May, 1818, while he was still lame, he was seized with a very violent inflammation of the sclerotic coat and iris of one eye, which was subdued by very copious blood-letting, and the exhibition of mercury. He had another attack of the disorder in the year 1820, and in the winter of 1822 he became affected with an inflammation of the iris and sclerotic coat of the other eye, which was also relieved by blood-letting and the use of mercury.

Another gentleman gave the following history of his complaints. In the year 1809, he had symptoms resembling those of gonorrhœa; and when these had continued for some time, one testicle became inflamed and swollen. This was followed by a purulent ophthalmia, and inflammation of the synovial membranes. In the year 1814, he had a similar attack, with the exception of the swelled testicle; and in the year 1816, when I was consulted, he still laboured under a chronic inflammation of the synovial membranes of the knees and ankles, the consequence of the last attack, and by which his lower limbs were completely crippled.

In a fourth case, the patient laboured under a severe ophthalmia, which was followed by inflammation of the urethra, and then the joints became affected: but I had no opportunity of watching the progress of this case, nor have I heard any other particulars of it.

In another case, the patient laboured under strictures of the urethra. He had four attacks of the disease, which has been just described, in the course of a few years. The inflammation of the urethra was in all of them the first symptom; which was followed by purulent ophthalmia, and afterwards by inflammation of the synovial membranes, and swelling of nearly all the joints. In two of these attacks, he attributed the discharge from the urethra to his having received the infection of gonorrhœa, and in the two others to the use of the bougie.

I shall conclude this chapter with the histories of two cases, one of which bears a near relation to those which I have just described, and is introduced chiefly as it shows the good effects produced occasionally by the exhibition of the colchicum; while the other affords an example of the advantage derived from the exhibition of mercury, under certain circumstances.

## CASE XIII.

A gentleman twenty-three years of age, in the beginning of July, 1819, rode 24 miles on horseback, trotting very hard on account of rain. Two days afterwards he observed a slight swelling of the left knee; but this did not prevent his going about his usual occupations. About the middle of July, a slight purulent discharge took place from the urethra, with little or no pain. On the first of August, he walked a considerable distance, and found the knee to be more painful. On the second of August he applied to me, with the knee very much swollen and very painful. Twenty leeches were applied, and afterwards a cold lotion; but this gave him no relief.

August 3d, the pain had much increased, so that it was excruciating. He was bled in the arm, and was in much less pain afterwards. Some saline medicine with the *pulv. ipec. comp.* was administered. In the evening a blister was applied; but as soon as the blister began to act the pain returned, and was as severe as formerly.

August 5th, he continued suffering very much from pain.

August 6th, the pain was very intense in the knee. The purulent discharge from the urethra was rather increased. There was a slight degree of inflammation of the *tunica conjunctiva* of the left eye. He was bled, with little or no relief. A saline draught, with a few grains of the *pulvis ipecac. comp.* in twenty minims of the *vinum (radicis) colchici*, was administered every six hours. When he had taken four doses of this medicine he became sick, and vomited, and was afterwards purged. The colchicum was discontinued.

August 7th, he was quite free from pain, but the synovial membrane was much distended with fluid.

August 15th, the knee had continued free from pain, but was much swollen. With a view to promote the absorption of the fluid, another blister was applied; but, as soon as it began to operate, the pain returned and was more excruciating than ever; and continued so on the following day, August 16th, when the *vinum colchici* was again administered. As soon as he had taken three doses of 20 minims each, he was sick and purged, and this was followed by an immediate and complete relief from pain.

August 17th, he was free from pain, except on motion.

August 18th, the swelling began to subside, and, in the course of a few days, it had entirely disappeared, and he was quite recovered.

The inflammation of the eye subsided, without any particular local treatment, in about ten days from the period of its commencement. The purulent discharge from the urethra continued for some time afterwards.

The pain in the knee, in this case, was of such a kind as to be almost insupportable. The patient said that he could compare it to nothing but the sensation which might be produced by the joint being forcibly torn open. The pulse was never accelerated, except at



those times when the pain was most intense. Purgatives and other remedies were administered in the course of the disease, but nothing seemed to be productive of benefit, except the *vinum colchici*.

#### CASE XIV.

John Welsh, thirty years of age was admitted into St. George's Hospital, on the 21st of February, 1827.

The right knee was much distended with fluid. He complained of constant pain in the joint, and of painful startings of the limb at night; by which he was frequently awakened from his sleep. The pain was aggravated by every motion of the joint, and by pressing the articulating surfaces against each other. The pulse beat one hundred in a minute.

He stated that, nearly five months ago, he had been a patient in the Middlesex Hospital, on account of an inflammatory affection of his chest; and that blisters had been at that time applied to his side. As soon as the inflammation of the chest was relieved, both his knees became swollen and painful. He was then made an out-patient. The inflammation of the knees abated under the use of liniments; but towards the end of December, 1826, the right knee became again inflamed, and continued so until the period of his being admitted into St. George's Hospital. Blood was taken from the knee by cupping; and the *pulvis ipecacuanhæ compositus* was directed to be given every night. Afterwards the cupping was repeated, several blisters were applied in succession; and  $\zeta$ ss. of the *vinum radices colchici* was administered three times daily for three successive days, after which it was discontinued on account of it having acted considerably on the bowels.

Under this treatment, however, little or no amendment took place with respect to the local disease, and the pulse rose to 108.

March 17. I was led to suspect that the fluid in the joint might be purulent. In order to ascertain this, I punctured the knee with a narrow sharp-pointed instrument; and, by applying a cupping glass over the puncture, drew off between two and three ounces, not of pus, but of turbid serum, with small flakes of coagulated lymph floating in it.

March 20. The fluid had become again collected in the joint, so that the swelling was large as ever. The pain, however, had been manifestly relieved by the puncture. Pulse 110. The man complained of pain, referred to the right ulna and to the forehead, which he said he had felt for the last week.

He was directed to take the following pill, three times daily:—

R. Hydrargyri submuriatis, gr. ij.  
Opii gr. ss.  
Fiat pilula.

March 27. The pains in the head and ulna were relieved. The knee was less swollen and painful. Pulse 100. The gums were beginning to be sore. It was directed that the pill should be taken twice daily.

March 31. The knee was much improved. Pulse 88. It was ordered that the pill should be taken only once daily.

April 10. After having been quite free from pain in the knee, he had a slight recurrence of it; on account of which, it was thought advisable to apply leeches, and afterwards a blister.

From this time he continued to mend.

April 23. The mercurial pills were discontinued, and soon afterwards he was dismissed as cured.

---

## CHAPTER II.

### ON ULCERATION OF THE SYNOVIAL MEMBRANE.

When an abscess has formed in a joint, an ulcerated opening takes place in the synovial membrane, through which the matter is discharged. The following are the only cases, which have come under my observation, in which ulceration of the synovial membrane has occurred as a primary affection. The most remarkable circumstance which they demonstrate is, that a disease apparently slight, and of a part which is in no way concerned in the vital functions, should produce such a degree of disturbance of the constitution, as to occasion death. Of this however they form by no means, a solitary example; and every surgeon and physiologist will be able to call to mind numerous other instances, which show that an impression made upon a small part of the nervous system may derange and ultimately destroy, the functions of the whole animal frame.

#### CASE XV.

A young lady, nine years of age, being at play on the 1st of January, 1808, fell and wrenched her hip. She experienced so little uneasiness, that she walked out on that day as usual. In the evening she went to a dance; but while there was seized with a rigor; was carried home, and put to bed. Next morning she was much indisposed, and complained of pain in the thigh and knee. On the following day she had pain in the hip, and was very feverish. These symptoms continued; she became delirious; and she died just a week from the time of the accident.

On inspecting the body on the following day, the viscera of the thorax and abdomen were found in a perfectly healthy state. The



hip-joint on the side of the injury contained about half an ounce of dark-coloured pus; and the synovial membrane, where it was reflected over the neck of the femur, was destroyed by ulceration, for about the extent of a shilling.

### CASE XVI.

A middle-aged man, who had met with a contusion of one shoulder, was admitted into St. George's Hospital in the winter of 1812.

He complained of pain and tenderness of the shoulder, and a very slight degree of swelling was observable: but his principal disease was a fever, resembling typhus in its character, of which he died in a few days after his admission.

On inspecting the body, about half an ounce of thin pus was found in the shoulder-joint. The synovial membrane bore marks of general inflammation; and in one spot, where it was reflected over the neck of the os brachii, it was destroyed by ulceration for about the extent of a sixpence.

---

## CHAPTER III.

ON CASES IN WHICH THE SYNOVIAL MEMBRANE HAS UNDERGONE A MORBID CHANGE OF STRUCTURE.

---

### SECTION I.

#### PATHOLOGICAL OBSERVATIONS.

THERE are some diseases, which consist simply in a morbid action; there are others, in which the morbid action produces a morbid change of anatomical structure.

Diseases of the latter class differ in their nature in different organs. Thus the tubercles, which affect the lungs in *phthisis pulmonalis*, are never met with in the breast; and cancer, which is frequent in the breast, never attacks the lungs, except by extending to them from the contiguous parts.

The disease, which I am about to describe in the present chapter, consists in a morbid alteration of structure, which takes place in the synovial membranes of joints, and which, as far as I have seen, is peculiar to these parts. I have not in my own practice met with an instance of the same disease in the serous membranes, which so nearly resemble the former in their nature and functions; nor even in the

synovial membranes, which constitute the bursæ mucosæ and sheaths of the tendons.

Several years since, in examining a diseased elbow, I found the cartilaginous surfaces completely destroyed by ulceration: an abscess had formed in the joint and no remains were observable of the natural structure of the soft parts, these being every where converted into a pulpy substance, of a light brown colour, and about one-third of an inch in thickness. As the ravages of the disease were very extensive, it was impossible to determine, from the appearances on dissection, where the morbid action had originated. This case, however, differed materially from some others which I had met with, in which the destruction of the cartilages was not attended by any affection of the soft parts similar to that which has been described. The following cases, which have since occurred, furnish examples of the same disease in earlier stages of its progress, and show that it begins in the synovial membrane, and that the other parts become affected only in a secondary manner.

#### CASE XVII.

In a diseased knee, which was sent to me for examination by my friend the late Mr. Horn, surgeon to the Newcastle Infirmary, I found, in the cavity of the joint, about four ounces of a pale yellow fluid, having flakes of coagulated lymph floating in it. The synovial membrane, where it formed the loose folds, extending from one bone to the other; where it was reflected over the bones themselves, the crucial ligaments, and the fatty substance of the joint, had completely lost its natural appearance. It was converted into a pulpy substance, in most parts about a quarter, but in some parts nearly half an inch in thickness, of a light brown colour, intersected by white membranous lines, and with red spots formed by small vessels injected with their own blood. The synovial membrane on the edge of the cartilaginous surfaces had undergone a similar change of structure, but only for a small extent. The semilunar cartilages were entire, but in a great measure concealed by the pulpy substance projecting over them. The cartilages covering the bones, in a few places, were in a state of incipient ulceration.

#### CASE XVIII.

Martha Manners, twenty-six years of age, was admitted into St. George's Hospital, on the 6th of March, 1813, on account of a disease in her right knee.

She said that in June, 1811, she first observed the joint to be swollen and stiff; and from this time, the swelling and stiffness increased; but, in the first instance, by very slow degrees. About Michaelmas, 1812, she caught cold, and the swelling increased more



rapidly; but it was not attended with any considerable degree of pain.

At the time of her admission into the hospital, the right knee measured about two inches in circumference more than the left. The swelling was elastic; prominent at the upper and lower part of the joint; not having the form of the articulating ends of the bones. The joint admitted of motion, but the leg could not be completely bent or extended on the thigh.

Various remedies were employed without the smallest benefit. The stiffness of the joint increased. About the middle of May, she began to experience considerable pain; and soon afterwards an abscess presented itself by the side of the ligament of the patella, which was opened on the 15th of June. The orifice made by the lancet healed in a few days; but she continued to suffer severe pain; her health became much affected, and on the 6th of August the limb was removed by amputation.

On examining the joint, about an ounce of thick matter was found in its cavity. The ligaments were in a natural state. The synovial membrane had undergone precisely the same alteration as in the case which has just been related. The only point of difference that could be observed was, that the whole of that portion of the membrane which is reflected over the cartilages had become affected, presenting the same appearance as elsewhere, but being thickened in a less degree. The cartilages had begun to ulcerate in a few spots; but the ulceration had made so little progress, that it might not have been noticed on a superficial inspection.

### CASE XIX.

Samuel Langford, twenty-four years of age, was admitted into St. George's Hospital on the 22d of April, 1812.

At the time of his admission one of his knees was swollen to nearly twice its natural size. The swelling was prominent on the anterior and lower part of the thigh. It was soft and elastic, so that at first it appeared to contain fluid; but, on particular examination, the absence of fluid was ascertained by the want of fluctuation. The leg was kept in the half-bent state, and the joint admitted of only a very limited degree of motion. He had no pain, even when attempts were made to move the limb. The skin over the diseased part was of a pale colour, with some dilated veins ramifying in it. On each side of the joint a small orifice was observed, through which the probe might be introduced into a sinus; but the sinuses appeared to be of small extent. His general health was unimpaired. He said that, two years ago, he first experienced some pain in the knee, but it was not sufficient to prevent his going about his usual occupations. Soon afterwards the joint began to swell, and the enlargement gradually increased from that period. Several abscesses had formed at different times; but the greater number of them had healed.

About two months after his admission into the hospital, the limb was amputated.

On dissecting the diseased joint, the ligaments were found in a perfectly natural state. The whole synovial membrane, except where it was reflected over the cartilages, was converted into a pulpy, elastic substance, of a brown colour, intersected by white membranous lines, in some places half an inch in thickness, in others more; and in those parts where the membrane was reflected over the bones, near the border of the cartilages, it was destroyed in spots by ulceration.

The semilunar cartilages were in a natural state, but in a great measure concealed, in consequence of their being enveloped in the mass of substance formed by the diseased synovial membrane. The cartilaginous surfaces of the femur and patella were extensively, but not entirely, destroyed by ulceration; the ulceration being greatest towards the circumference. On the internal portion of the head of the tibia, the cartilage was destroyed only for a very small extent, the ulceration being entirely confined to the margin. On the external portion of the head of the tibia, the cartilage was absorbed to a greater extent. The bones possessed their natural structure and hardness. The cavity of the joint contained matter, and the sinuses communicated with it.

#### CASE XX.

Michael Purcel, sixteen years of age, Was admitted into St. George's Hospital, on the 10th of July, 1811, on account of a disease in the right knee.

He said that, in the summer of 1807, he had received a blow on the inside of the joint. Some time afterwards a swelling formed and burst, and some fluid was discharged. In about a week the orifice healed; a slight degree of stiffness only remained, and he was able to follow his usual occupations. He continued well till December, 1810, when the joint was observed to be increased in size. From this time the swelling increased, but with no other inconvenience than stiffness of the joint, and a slight degree of pain in walking.

At the time of his admission into the hospital there was a large swelling of the knee, extending an inch or more up the anterior part of the thigh, under the extensor muscles. The swelling was more prominent in some parts than in others. It was soft and elastic, and gave to the hand an indistinct sensation, as if it contained fluid. The leg was kept in a half-bent position, and was nearly immovable on the thigh. He had no pain, except on motion or pressure.

On the 28th of November, an abscess burst on the outside of the joint, and discharged a small quantity of pus. After this other abscesses formed, and burst at various times. The swelling continued to increase. Amputation was performed on the 6th of April.

On dissecting the amputated joint, all the ligaments were found in a natural state. The synovial membrane had precisely the same ap-



pearance as in the last case. In some parts it was half an inch, in others more than an inch, in thickness. The cartilages were for the most part destroyed by ulceration, and carious\* surfaces of bone were exposed. The abscesses appeared to have formed in the substance of the synovial membrane, and did not communicate with the cavity of the joint, nor did the joint contain pus.

### CASE XXI.

A boy, six years of age, was admitted into St. George's Hospital, in March, 1808, on account of a disease in one knee.

The joint was larger than the natural size. The leg was bent at a right angle to the thigh, and admitted of no motion. The skin on the outside was ulcerated to a considerable extent. Various remedies having been employed without success, the limb was amputated on the 29th of April. On examining the joint, the synovial membrane was found to have undergone a morbid change of structure, similar to that in the preceding cases; but with this difference, that the pulpy substance into which it was converted projected into the joint, so as nearly to fill its cavity, and adhered to the cartilaginous surfaces. On making a longitudinal section of the joint, the cartilage covering the bones was seen, as a white line, about one-tenth of an inch in thickness, connected to the bone on one side, and having the pulpy substance adhering to it on the other. It was, therefore, thinner than natural; but otherwise entire, except at the posterior part of one of the condyles of the femur, where it was destroyed by ulceration for a small extent. There were no distinct remains of the ligaments external to the joint, and only some small vestiges of the crucial ligaments and semilunar cartilages.

### CASE XXII.

John Dillemore, thirteen years of age, was admitted into St. George's Hospital, in the summer of 1812, on account of a disease in one knee. At that time the joint was slightly swollen and stiff, so as to admit of only a very limited degree of motion. He was free from pain. The swelling was elastic, without any perceptible fluctuation of fluid. These symptoms had been coming on gradually about two years previous to his admission. At this time he remained in the hospital for upwards of three months; and a great number of remedies, which it is unnecessary to enumerate, were employed without the smallest benefit.

\* In using the term *caries*, on this and on other occasions, I have considered it as synonymous with ulceration: or, at least, as expressing that state in bones, which corresponds to ulceration in soft parts. Some confusion has been produced in pathological nomenclature in consequence of this term having been employed by some to express, not only bone which is ulcerated, but that whose surface has been exposed from other causes.

On the 26th of January, 1814, he was re-admitted into the hospital. The affected knee was about two inches and a half in circumference more than the other. The swelling was elastic; it extended up the anterior and lower part of the thigh, as in cases of inflamed synovial membrane; but its form was less regular, being more prominent, and extending higher up on the outside than on the inside. The leg was kept in the half-bent position, and was perfectly immovable on the thigh. He was subject to occasional attacks of violent pain. He said, that the swelling had gradually increased from the period of his quitting the hospital, in 1812, but that he had not been subject to very severe pain till about six weeks previous to his re-admission. On the 31st of January the limb was amputated.

On examining the diseased joint, the synovial membrane was found converted into a pulpy substance of a light brown colour, with red spots arising from vessels ramifying in it injected with their own blood, and intersected by very numerous membranous lines. On the outside of the joint, the diseased membrane was in some places nearly an inch in thickness. The membrane covering the cartilages in some parts was in a natural state; in other parts, it had undergone the same morbid change of structure as elsewhere. The cartilages were ulcerated in spots. There was about half an ounce of pus in the cavity of the joint; and there were two or three abscesses in the substance of the synovial membrane, not communicating with the joint, containing in all about the same quantity of purulent matter.

### CASE XXIII.

William Hine, twenty-three years of age, was admitted into St. George's Hospital on the 12th of December, 1814, on account of a complaint in one of his knees. He said that, in the summer of 1812, he first observed a slight degree of stiffness and swelling of the joint, unattended by pain. At first the swelling was confined to the inside, but it gradually extended itself over the whole circumference of the joint. The stiffness and swelling slowly, but uniformly, increased, and about the end of the year 1813 he began to experience considerable pain.

At the time of his admission, the knee was much swollen; the swelling was irregular, and most prominent on the inside; it was soft and elastic, without the fluctuation of fluid. The patient complained of constant, deep-seated, gnawing pain, which disturbed his sleep. He had a slight degree of hectic fever. On the 16th of December the limb was amputated.

On dissecting the amputated joint, the synovial membrane was found to have undergone the same morbid alteration of structure as in the last case. The cartilages were slightly ulcerated in a few spots.



## CASE XXIV.

James Gould, sixty-five years of age, was admitted into St. George's Hospital, in May, 1814. One knee was swollen and stiff, admitting of scarcely any motion. The swelling was elastic. He complained of severe pain in the joint. Near the ligament of the patella was the orifice of a sinus communicating with the articular cavity, and discharging a very small quantity of pus. No clear history could be procured of the disease in its earlier stages; but it appeared that he had been subject to repeated attacks of inflammation of the synovial membrane.

The limb was amputated on the 23d of May.

On dissection, the ligaments, bones, cartilages, and that portion of the synovial membrane which is reflected over the cartilages, were found to be in a natural state; but the synovial membrane in other parts had undergone the same morbid alteration of structure as in the preceding cases.

---

These cases furnish examples of the same disease in different stages of its progress. The morbid action evidently originates in the synovial membrane, which loses its natural organization, and becomes converted into a thick pulpy substance, of a light-brown, and sometimes of a reddish-brown colour, intersected by white membranous lines. As the disease advances, it involves all the parts of which the joint is composed, producing ulceration of the cartilages, caries of the bones, wasting of the ligaments, and abscesses in different places.

I have already remarked, that this disease is peculiar to the synovial membranes; at least, that I have never met with it in any other part of the body; but it belongs to the same order with tubercles of the lungs, scirrhus of the breast, the medullary sarcoma or fungus hæmatodes of the testicle, and numerous other diseases, in which the natural structure of the affected organ is destroyed, and a new and different structure is added in its place. To these also it bears a near resemblance in its progress. Thus, tubercles of the lungs, in the first instance, occupy the vesicular and interlobular substance; but ultimately they inflame and ulcerate; abscesses form in them; and then the pleura, the bronchia, and other contiguous parts, become affected. Similar circumstances mark the progress of other maladies of the same description.

The cases which have been related are not the only ones in which I have had the opportunity of tracing the same morbid appearances. I have also met with several others, in which the similarity of the history and symptoms, and the resemblance in the form and elasticity of the tumour, indicated the disease to be of the same nature, although I was not able to verify the fact by dissection. In every case, in which I have had it in my power to watch its progress, the complaint has advanced slowly, and sometimes has remained in an indolent state during a very long period: but ultimately it has always terminated in the destruction of the joint.

It is a remarkable circumstance, that this affection of the synovial membrane is rarely met with except in the knee. I have never known an instance of it in the hip or shoulder.\* It is probable that the influence of the external cold may operate as one of the causes by which the disease is produced, and this may explain why it occurs frequently in the knee, and seldom in deep-seated articulations.†

It is evident from the history of cases in which a part of the living body has assumed a new and morbid structure, that this alteration seldom takes place except by slow degrees; and it would add much to the interest and utility of researches in morbid anatomy if it were more frequently attempted to ascertain, what is the first change in the organisation of the affected part which disease produces, and from thence to trace the gradual progress of the other changes which take place, until the destruction of the natural organisation is completed. Whether the following case is to be considered as of the same kind with those already recorded, but in an earlier stage of the disease, cannot at present be determined; but it appears not improbable that it is so; and I shall venture to relate it in this place, in the expectation that it may, at any rate, be of some service in assisting the investigations of future inquirers.

#### CASE XXV.

——— Belton, a boy eleven years of age, was admitted into St. George's Hospital, in August, 1810, on account of a disease in one knee.

There was but little pain in the joint: it was slightly enlarged, admitted of some motion, but not of complete flexion and extension. His parents said that the disease had begun about a year and a half before his admission into the hospital, that it had increased very slowly; and that he had never suffered from it any serious distress. Various remedies were employed without benefit; and in a short time his friends took him out of the hospital. A few weeks afterwards he died, in consequence of an accumulation of water in the ventricles of the brain.

I obtained permission to examine the body.

The synovial membrane of the affected knee externally had its natural appearance. Internally it was lined by a straw-coloured gelatinous substance, so intimately adhering to it, that it could not be detached, except by an artificial separation. The synovial membrane was incruited in this manner everywhere except on the cartilaginous surfaces. The gelatinous substance in general appeared about one-eighth of an inch in thickness; but in some parts, near the borders of the cartilages, it was much thicker, so as to project considerably into

\* My friend, Mr. Hodgson, surgeon to the hospital at Birmingham, informs me that he has met with one example of it in the ankle, and another in one of the joints of a finger.

† The account of the *fungus articuli*, which has been given by some German writers, appears to have been drawn, partly, from cases of disease described in this



the cavity of the joint. In a few places, towards the margin of the articulating surfaces, the cartilage had begun to ulcerate; in some of these it was entirely absorbed, so that the bone was exposed; but, for the most part, there was only an irregular ulcerated surface towards the cavity of the joint: the remaining portion of the cartilage being entire, and having its natural adhesion to the bone.

The synovial membrane itself bore no marks of inflammation. In the substance with which it was lined, some vessels were observed ramifying, beautifully injected with their own blood; but these were few in number, and only in certain parts. This substance differed in appearance from the coagulated lymph which is found on the surface of an inflamed membrane; and we may presume, therefore, that the effusion of it was the result, not of inflammation, but of some other morbid action.

---

## SECTION II.

### ON THE SYMPTOMS OF THIS DISEASE.

THIS disease generally takes place in persons who are not much above the age of puberty. I do not recollect more than one instance of it having occurred after the middle period of life. In general it can be traced to no evident cause, but occasionally it is the consequence of repeated attacks of inflammation. In this respect it resembles other diseases of the same order. Inflammation of the lungs may lay the foundation of tubercles, and inflammation of the breast may occasion the growth of a scirrhus tumour. Where I have had an opportunity of examining the morbid appearances after amputation, I have always found the whole, or nearly the whole, of the synovial membrane affected by the disease; but it is probable, that if the examinations were made at an earlier period, we should often find the morbid change originating in some one point. At least this is in conformity to what we find in other maladies, which correspond to this in their nature; and in one instance, in a girl who laboured under this affection, and who died of an attack of fever, I found one-half of the synovial membrane altered in structure, and the other half retaining its natural appearance.

In the origin of this disease, there is a slight degree of stiffness, and tumefaction, without pain, and producing only the most trifling

chapter, partly, from cases of inflammation of the synovial membrane. Mr. Russel seems to have taken his history of the pathology of white-swelling in great measure from cases similar to those which have been related; but we must observe, that the term white-swelling has been applied, almost indiscriminately, to all the affections to which the joints are liable, and by no means confined to that under our present consideration.

inconvenience. These symptoms gradually increase. In the greater number of cases, the joint at last scarcely admits of the smallest motion; but, in a few cases, it always retains a certain degree of mobility. The form of the swelling bears some resemblance, to that in cases of inflammation of the synovial membrane but it is less regular. The swelling is soft and elastic, and gives to the hand a sensation as if it contained fluid. If only one hand be employed in making the examination, the deception may be complete, and the most experienced surgeon may be led to suppose that there is fluid in the joint, when there is none: but if both hands be employed, one on each side, the absence of fluid is distinguished by the want of fluctuation.

The patient experiences little or no pain, until abscesses begin to form, and the cartilages ulcerate; and even then the pain is in many instances not so severe as where the ulceration of the cartilages occurs as a primary disease; and the abscesses heal more readily, and discharge a smaller quantity of pus, than in cases of this last description. At this period the patient becomes affected with hectic fever; loses his flesh, and gradually sinks, unless the limb be removed by an operation.

The progress of this disease varies in different cases. In general, one or two years elapse before it reaches its most advanced stage; but sometimes the period is much longer; and occasionally it becomes indolent, so that it remains during many months without any sensible alteration. In like manner, tubercles of the lungs, or scirrhus of the breast, in some instances, remain in an inactive state for several months, or even for one or two years.

The diagnosis of this disease is seldom difficult. The gradual progress of the enlargement and stiffness of the joint without pain, and the soft elastic swelling without fluctuation, in the majority of cases, enable us to distinguish it readily from all the other morbid affections to which the joints are liable.

The cases with which those of this disease are most liable to be confounded, are those of chronic inflammation of the synovial membrane.

1st, When the synovial membrane has undergone a morbid change of structure, it occasionally happens that a preternatural secretion of fluid takes place at the same time from its inner surface; and the joint becomes distended, not with synovia, but with a turbid serum, having flakes of coagulated lymph floating in it, which causes the tumour to present nearly the same external characters as where the synovial membrane is inflamed. But here the swelling will not yield to that treatment, under which it would be speedily reduced if it depended on simple inflammation; and attention to this circumstance, joined with an accurate previous history, will enable us to recognise the real nature of the disease.

2dly, When the synovial membrane, after inflammation has subsided, has been left in a thickened state, and coagulated lymph has been effused into the articular cavity, the tumour, in some instances,



a good deal resembles the tumour which occurs in cases of this disease; so much so, that it will be very difficult to give a correct opinion, merely from observing the present appearance and condition of the joint. The surgeon must, under these circumstances, in great measure form his judgment from the account which he receives of the origin and early symptoms of the complaint; or (when an accurate statement cannot be procured) by waiting to observe its future progress.

### SECTION III.

#### ON THE TREATMENT.

WHEN a part is swollen and rigid in consequence of inflammation, the swelling and rigidity may often be dispersed; but I know of no instance in which an organ having completely lost its natural structure is capable of having that structure restored. Physicians and surgeons have been employed during successive ages, in endeavouring to discover a cure for tubercles of the lungs, and cancer of the breast, and the result of their labour is only to prove that these diseases are incurable. Analogy, therefore, would not lead us to be sanguine as to the discovery of a remedy for this affection of the synovial membrane, and experience demonstrates that it is equally incurable with other maladies of the same order. It would be needless for me to occupy the time of my readers by a detail of the various remedies which I have tried, or seen tried by others, in cases of this description; since the general result of these trials was only to lead to the above conclusion. By means of rest and cold lotions, the progress of the disease may be somewhat checked, as the suppuration of tuberculated lungs may be retarded by occasional bleeding, and a milder climate. Where there is considerable pain in consequence of the cartilages having begun to ulcerate, some benefit is derived from the use of warm fomentations and poultices. But no method, with which I am acquainted, is capable of doing more than somewhat checking the progress, and somewhat relieving the symptoms of the complaint. In every case of which I have had an opportunity of seeing the termination, the ulceration of the cartilages, the formation of abscesses in the cavity of the joint, and the consequent disturbance of the patient's general health, have ultimately rendered the amputation of the limb necessary, in order to preserve the patient's life. At this period, therefore, the surgeon is called upon to recommend and urge an operation; but at an earlier period, it is a matter of choice with the patient, whether he will live with the incumbrance of a useless limb, till the advanced stage of the disease renders its removal indispensable, or whether he will submit to the loss of it, before the absolute necessity for losing it exists.

## CHAPTER IV.

## ON THE ULCERATION OF THE ARTICULAR CARTILAGES.

## SECTION I.

## PATHOLOGICAL OBSERVATIONS.

It has been taught by some anatomists, that the articular cartilages are not endowed with vascularity; and that, when there is an appearance of their having been destroyed by ulceration, this must really have been affected, not by the action of vessels in the cartilages themselves, but by that of the vessels of the other parts with which they are connected, or with which they come in contact. Various circumstances, however, seem to be in contradiction to these opinions.

Up to the period of growth being concluded, we must suppose the articular cartilages to be vascular, otherwise we cannot account for the changes of bulk and figure which mark their progress towards complete development. In the child, canals or sinuses may be seen ramifying through their substance containing blood, and manifestly intended to answer the purposes, though not constructed with the distinct tunics of ordinary blood-vessels.

In the adult person these canals for the distribution of blood are not perceptible. This proves that they are very minute, but not that they are altogether wanting. 1. In the transparent cornea of the eye, no vascular structure can be detected under ordinary circumstances; but the existence of vessels in the cornea is proved by the changes which it undergoes in disease; and when it is inflamed, such vessels become distinctly visible, injected with red blood. So we meet with occasional, though rare instances, of vessels containing red blood extending from a diseased bone into the cartilage covering it. Cases, in which this appearance was observed, will be mentioned in the next chapter, and similar appearances have been noticed and described by



Mr. Mayo.\* 2. The cartilages of the joints are subject to the constant and the powerful operation of friction, yet they are not affected by it. They continue as thick and as perfect in those who are unremittingly engaged in bodily exercise, as in the most inactive persons. The cartilages of the knee and ankle are exposed to friction at least as much as the hard enamel and ivory of the teeth; yet we often see persons in whom the latter are much worn away, while the former remain entire. These circumstances cannot be explained, unless we admit the cartilages to possess a power of reparation; and this must be supposed to depend, as in other textures, on the action of blood-vessels modified by that of the absorbents. 3. We find occasionally some portion of the cartilage covering the articular extremity of a bone altered from its natural organization, converted into a number of fibres resembling ligament, each of which is connected by one extremity to the bone, while the other is loose towards the cavity of the joint. Here is a morbid alteration of structure, the occurrence of which seems to indicate that there must be such a vascular apparatus entering into the formation of cartilage as enables new materials to be deposited, and old materials to be absorbed, and without which morbid alterations of structure do not take place in other parts of the body.†

In some of the cases related in the former chapters, the cartilage covering the articular cartilage had been removed for some extent on the surface towards the cavity of the joint, while that portion of it which was connected to the bone remained entire, and retained its natural structure. In the two following cases, the same thing was observed to a very great extent; and this superficial abrasion had taken place in many parts, in which cartilage was in contact with cartilage, and where, therefore, it was impossible to attribute it to the operation of vessels belonging to any of the neighbouring textures.

### CASE XXVI.

A boy, twelve years of age, on the 28th of June, 1809, fell from a height, and pitched on one of his knees. When he was brought to the hospital, he was found to have a compound fracture of the femur. For some days he appeared to go on well; but afterwards an abscess formed in the thigh, extending as high as the nates; and he sunk and died on the 21st of July. On examining the knee-joint after death, the cartilage covering the condyles of the femur, and that covering the head of the tibia, were found in some parts, entirely absorbed, so that the bone was exposed; while in other parts it was absorbed on the surface towards the cavity of the joint, the layer of

\* Mayo on Ulceration of the Cartilages of the Joints; in the *Medico-Chirurgical Transactions*, vol. xix. p. 63, 64.

† For farther observations relating to this pathological question, see the note at the end of this volume.

it next to the bone retaining its natural adhesion, and its natural structure. The cartilage, in these parts, was formed into grooves, having an appearance as if the greater portion of its substance had been removed with a chisel. There was no purulent, nor other effusion, into the cavity of the joint.

### CASE XXVII.

A middle-aged man met with an injury of the knee, which was followed by inflammation and suppuration, and he died in St. George's Hospital on the 30th of August, 1809.

On examining the joint after death, the cartilage covering the condyles of the femur, and the head of the tibia, was found entirely destroyed towards the circumference, so that the bone was exposed. Elsewhere, only a thin layer of cartilage remained; but this had its ordinary texture, and adhered as firmly as usual to the bone.

I conceive that the foregoing cases, and the other facts which have been stated, are sufficient to prove that the articular cartilages may be absorbed or ulcerated from the action of their own vessels, and that the ulceration may begin, and frequently does begin, on that surface which is towards the articular cavity. At the same time, it is to be observed, that in many instances the ulceration begins in another situation; and that I have frequently seen the cartilage abraded where it had been in contact with the bone; while on the surface, towards the cavity of the joint, it remained smooth and perfect. Under these circumstances, the space formed by the absorption of the cartilage becomes filled up by a vascular substance, resembling granulations, and uniting the bone and cartilage to each other.

In whatever way the ulceration of the articular cartilage is produced, there is this remarkable difference between it and the ulceration of soft parts; suppuration seldom takes place while the ulcer of the cartilages is small, and often the disease proceeds so far as to cause caries of the bones to a great extent, without matter being formed in the joint. This circumstance is deserving of notice. It has long been established, that suppuration may take place without ulceration; and it appears that in this instance ulceration occurs without the formation of pus.

Ulceration of the articular cartilages may arise under various circumstances:—

1st, It may be the consequence of disease originating in the neighbouring soft parts, especially of inflammation of the synovial membrane; examples of which may be found among the cases related in the preceding chapters.



2dly, It may depend on a morbid condition of the cartilage itself;  
or,

3dly, On a chronic inflammation of the surface or substance of the bone with which it is connected.

4thly, It may be the result of a peculiar alteration in the condition of the cancellous structure of the bones, which is met with in young scrofulous persons.

This last form of the disease requires to be considered separately, and will constitute the subject of the next chapter. The observations, which I have to offer at present, will relate to ulceration of the cartilages occurring under other circumstances, but especially to those cases, in which the disease has originated, either in the cartilage itself, or in the surface of bone with which it is connected. In practice I do not undertake to distinguish these two orders of cases from each other, and according to my experience it is often difficult, and sometimes impossible, to do so even in our dissections.

#### CASE XXVIII.

In examining a body brought into the dissecting-room in Windmill Street, I found the cartilage in a diseased state, in the joints of both hips, of one of the knees, and of both elbows. In some spots, the cartilages of these joints were altogether destroyed by ulceration, and carious surfaces of bone were exposed; in others, the cartilage was not completely absorbed, but it had the appearance of fibres, which were connected at one extremity to the bone, while the other extremity was loose towards the cavity of the joint, and having no lateral connexion with each other. The intervertebral cartilages connecting the bodies of some of the dorsal vertebræ were also in a diseased state. They retained the usual appearance of concentric layers towards the circumference; but in the centre, instead of the white semi-fluid substance, which is met with under ordinary circumstances, they were found to be of a brown colour, of a solid and somewhat brittle texture, composed of several portions, having a very slight adhesion to each other. The ligaments, the synovial membranes, and the bones, were all in a natural state, except that the latter were occasionally carious, in consequence of the absorption of the cartilage; the caries being unattended by the formation of matter.

In this case the original disease appears to have been a morbid state, and subsequent ulceration of the cartilages. It shows that where the disposition to it exists, the destruction of the cartilage may take place in several joints at the same time; and I have observed the same thing in other instances.

The conversion of the cartilage into a soft fibrous structure has been already noticed. I am disposed to believe that it is the frequent, though not the constant, forerunner of ulceration. In a woman, who died a week after a severe contusion of the hip, the cartilage of the head of the femur was found in some parts entirely absorbed, in oth-

ers having a fibrous appearance, similar to what has been described; and I have noticed the same circumstances in other cases, sometimes connected with, and sometimes independent of, local injury.

### CASE XXIX.

A girl, seven years of age, was admitted into St. George's Hospital, in May, 1809, on account of a complaint in the left hip. She had pain in the knee, the limb was shorter than is natural, and the nates were wasted and flattened. An issue was made with caustic, behind the great trochanter. Soon after her admission an abscess burst near the crista of the ilium. The disease in the hip appeared to be considerably relieved; but, on the 1st of August, she died of an accidental attack of erysipelas.

On inspecting the body, the glutæi muscles of the left side were found wasted, and of a dark colour. A sinus extended from the external orifice of the abscess through the soft parts, and communicated with the hip-joint, by an ulcerated opening in the margin of the acetabulum.

There were no remains of cartilage on the surface of the acetabulum. The exposed bone was in a carious state, and of a dark colour, and the cavity of the acetabulum was rendered deeper and wider than is usual. The greater part of the cartilage was destroyed on the head of the femur, and the small portion of it, which remained, was readily separated from the bone. This circumstance is often met with, where cartilage is undergoing the process of ulceration.

The capsular ligament was somewhat thicker than under natural circumstances, and more closely connected with the surrounding parts. There were no remains of the round ligament.

In the anterior part of the joint, a quantity of organised soft substance, resembling that of adhesions, was interposed between the head of the femur and the acetabulum, and behind this was a collection of dark-coloured pus. From these two causes the head of the femur had been separated from the os innominatum, and pushed outwards, and it had afterwards been drawn upwards by the action of the muscles, so that it was lodged on the superior part of the bony margin of the acetabulum. The synovial membrane was of a dark colour, but not otherwise diseased.

On examining the hip of the opposite side, I found the soft parts external to it, the capsular ligament, synovial membrane, and fatty substance of the joint, having no appearance of disease. The cavity of the joint contained about a drachm of dark-coloured pus. The cartilage was absorbed from about one-third of the surface of the acetabulum. The exposed bone in most parts presented a uniform compact surface, but in two places it was in a state of superficial caries. In some parts of the head of the femur, the cartilage had a fibrous appearance, similar to what has been already described; in other parts it was entirely absorbed, and a carious surface of bone was exposed;



and elsewhere it was in a natural state. The round ligament was ruptured by a very slight degree of force, which seemed to arise from the cartilage having been destroyed round its insertion into the acetabulum.

The bones in the neighbourhood of the carious surfaces of the left hip were of a darker colour than usual; but no such appearance was observed in the bones of the other hip, which were in all respects in a healthy state.

### CASE XXX.

John Catuack, forty-four years of age, was admitted into St. George's Hospital on the 29th of September, 1813, with pains in the lower limb of the right side, extending from the hip to the knee, and resembling the pains of rheumatism. He attributed these pains to his having caught cold about a month before his admission. He laboured also under a complaint of his bowels, of which he died on the 4th of December. On dissection, no preternatural appearances were discovered, except in the right hip. The capsular ligament and synovial membrane were in a natural state. The cartilages covering the head of the femur, and lining the bottom of the acetabulum, had been destroyed by ulceration, for about one half of their extent; and wherever the cartilage was destroyed, an ulcerated surface of bone was exposed. The round ligament was readily torn in consequence of ulceration having extended to it at the part where it was inserted into the acetabulum. The bones possessed their natural texture and hardness. There was no pus in the joint. It was observed that the ulcerated surface of the acetabulum corresponded to that of the femur, these surfaces being exactly in contact, in the position in which the patient had remained since his admission into the hospital.

### CASE XXXI.

William Bridges, twenty-one years of age, was admitted into St. George's Hospital, on the 28th of November, 1810. He gave the following account of his complaint:—About the middle of May preceding, he first experienced a pain in the right knee, which was aggravated by walking. At the end of a month, the pain became so severe, that he was under the necessity of being confined to his bed. He had slight pain in the hip; but that in the knee was intense, keeping him awake at night. An abscess formed, which, in the September following, burst on the inside of the thigh.

At the time of his admission, the nates were wasted and flattened; the limb on the affected side appeared to be an inch and a half longer than the other; there was a large abscess in the posterior part of the thigh. He was emaciated, and laboured under a hectic fever. An issue was made with caustic, behind the great trochanter of the fe-

mur, and afterwards a second issue was made in the same manner on the anterior edge of the *tensor vaginae femoris* muscle. Under this treatment, he experienced for a time great relief, notwithstanding that several abscesses formed and burst in different parts of the thigh. He became free from pain; regained his flesh; the hectic fever abated; and the discharge from the abscesses was much lessened. The limb now appeared to be shorter than the other. He continued to mend till the middle of February, 1811. At this period the former bad symptoms began to return. He was affected with a constant diarrhoea, and profuse perspirations, and he died on the 26th of March following.

On inspecting the body, the glutæi muscles were found wasted and shrunk, and in many parts their texture was destroyed by the abscesses, which communicated with the cavity of the joint by two ulcerated openings, one on the anterior, and the other on the posterior part. The abscesses formed several sinuses in the neighbourhood of the joint, and the capsular ligament was in consequence connected to, and in some measure blended with, the other soft parts.

The joint contained purulent matter. The synovial membrane was darker than natural, but otherwise had the ordinary appearance. There were no remains of the round ligament. The cartilages were every where absorbed, and the exposed surfaces of bone were in a carious state. The head of the femur was reduced to about two-thirds of its original size; and the acetabulum was rendered deeper and wider, nearly in the same proportion. At the bottom of the acetabulum there was an ulcerated opening, just large enough to admit a common probe, communicating with an abscess within the pelvis. The carious surfaces of the bones had the same dark colour and fetid smell as in many other cases of caries; but otherwise they did not differ from the healthy bones.

### CASE XXXII.

Jemima Holloway, about twenty-three years of age, was admitted into St. George's Hospital on the 30th of March, 1814, on account of a disease of the right hip. There was a large abscess in the neighbourhood of the hip, and the nates were wasted and flattened. She said that the disease had been going on for some years. On the 6th of June following her admission, she died.

On dissection, the glutæi muscles were found wasted and flabby, and of a pale colour.

There was a large abscess of the nates communicating with the hip, by means of an opening in the posterior part of the capsular ligament and synovial membrane. In other respects the synovial membrane and capsular ligament were in a perfectly natural state.

The cartilages covering the head of the femur and lining the bottom of the acetabulum were destroyed by ulceration. The ulceration had extended to the bones, so that the head of the femur was not



more than half, and the acetabulum was double, the usual size. The bones possessed their natural texture and hardness. There was an ulcerated opening at the bottom of the acetabulum, communicating with the inside of the pelvis.

### CASE XXXIII.

Phœbe Harper, twenty-four years of age, was admitted into St. George's Hospital on the 29th of August, 1825.

About two months previous to her admission she had been seized, while employed in hay-making, with an excruciating pain in the lower limb of the left side.

It subsided sufficiently to allow her to walk home; but on the following day it returned, and it was now referred particularly to the groin. Leeches, blisters, &c. were applied, but the pain continued very severe.

At the time of her being admitted into the hospital she was unable to move the limb: the foot was turned outwards; and every attempt to press the head of the femur against the surface of the acetabulum, as well as all pressure in the neighbourhood of the hip-joint, occasioned violent pain, so as to make the patient scream. The whole limb was hotter than natural; and the pulse beat between 90 and 100 in a minute.

Altogether the disturbance of the constitution was greater than might be expected from such a local complaint.

October 24th, the patient died. On dissection, it was found that no effusion, either of serum, or lymph, or pus, had taken place into the cavity of the hip-joint.

The synovial membrane was somewhat more vascular than usual, but the increased vascularity seemed scarcely to amount to inflammation. The cartilage covering the head of the femur had been destroyed by ulceration for more than half its extent; so as to expose the cancellous structure of the bone. The remaining portion of the cartilage covering the head of the femur was thinner than natural: but this was more observable in some parts than in others. Every where the loss of substance appeared to be on the surface towards the cavity of the joint; the layer of cartilage towards the bone being unaltered, except in one spot, where it was destroyed by ulceration to a very small extent.

The cartilage of the acetabulum was entirely destroyed, so that every where a carious surface of bone was exposed.

There were no remains of the round ligament.

The synovial membrane on one part of the neck of the femur was destroyed by ulceration; and here also a carious surface of bone was exposed.

The bones themselves had their natural structure and hardness, not differing from healthy bones, except on the carious or ulcerated surfaces.

I could add to the foregoing an account of the dissection of several other cases, in which the hip was affected with the same disease; but, in doing so, I should only occupy the reader's attention unnecessarily. It will be sufficient to observe that,—

1. In the most advanced stage of the disease, none of the parts entering into the composition of the joint retain their natural structure. The soft parts are blended into a confused mass. Sometimes the head of the femur is completely destroyed, and there remains only the neck, or a portion of the neck, of that bone. Often the projecting margin of the acetabulum is entirely absorbed; so that, instead of a cavity, there is a broad carious surface of the *os innominatum*. In a few instances, a portion of that carious bone is found dead, and undergoing the process of exfoliation, or having already exfoliated into the cavity of the joint.

2. In whatever period of the disease the examination is made, the cartilages are found in a state of ulceration; but the morbid affections of the soft parts and bones vary very much: nor are they much altered from their natural state, except in the most advanced stage of the malady.

From these circumstances, and from the appearances in several of the cases which have been related, in which the disease was found in its incipient stage, and wholly confined to the cartilages and bony surfaces with which the cartilages are in contact, we may conclude that, in a large portion of cases of caries of the hip, these are the parts primarily affected, and the following may be stated to be the progress of the disease:—

1. Ulceration takes place in the cartilages; generally in that of the acetabulum first, and in that of the head of the femur afterwards: sometimes it begins in both at the same time.

2. The ulceration extends to the bones, which become carious; the head of the femur is diminished in size, and the acetabulum is rendered deeper and wider.

3. Abscess forms in the joint; which after some time makes its way, by ulceration, through the synovial membrane and capsular ligament, into the thigh or nates, or even through the bottom of the acetabulum, into the pelvis. I have met with some cases in which an abscess connected with a diseased hip had burst into the rectum.

4. In consequence of the abscess, the synovial membrane and capsular ligament become inflamed and thickened. The muscles are altered in structure; sinuses are formed in various parts; and, at last, all the soft parts are blended together into one confused mass, resembling the parietes of an ordinary abscess.

In giving this statement, it is not my intention to assert that the hip is not liable to other morbid affections. I have in a former part of this work described the symptoms produced by inflammation of the synovial membrane of this joint. In the next chapter I shall point out another order of cases, in which the hip is affected in consequence of a scrofulous disease originating in the bones themselves: but still the conclusion remains that, in a large proportion of those



cases to which the name of "diseased hip" has been usually applied, the ulceration of the cartilages is the primary affection, and the other parts in and near the joint become affected only in a secondary manner.

As, from the peculiar situation and connexions of the hip, diseases of this part are attended with particularly serious consequences, I trust that the foregoing account will not be considered as given too much in detail, especially as it will prevent the necessity of entering with much minuteness into the history of the ulceration of the cartilages of other joints, in which the progress of the disease, allowance being made for the difference of structure and situation, is the same as in the hip.

#### CASE XXXIV.

David Martin, twenty-six years of age, was admitted into St. George's Hospital, on the 25th of July, 1810, on account of a disease in his right knee. He attributed it to a blow, which he had received some years previous; but he said, that the symptoms had all been much aggravated within the last six months. At the time of his admission into the hospital, the knee had the appearance of being swollen; but, on examination, this was found to arise from the wasting of the muscles, rather than from actual enlargement. The leg was fixed, or nearly so, in the half-bent position. The condyles of the femur projected beyond the head of the tibia. He complained of pain, which was particularly severe at night. An issue was made with caustic on each side of the patella; but the symptoms were not relieved, and an abscess burst on the outside of the joint, discharging a large quantity of matter.

Soon after his admission, he experienced, for the first time, severe pain in the other knee; but this was unattended by swelling, or any alteration in the form of the joint, and the leg admitted of complete extension and flexion on the thigh. The pain continued; but no swelling ever took place.

In the beginning of September, he was seized with an accidental attack of erysipelas. Abscesses formed in different parts of the leg and thigh; and he gradually sank, and died on the 7th of November.

On inspecting the body, the right leg was found bent so as to form a right angle with the thigh. The head of the tibia had been drawn towards the ham by the action of the flexor muscles, so that the condyles of the femur were unusually protuberant. The lateral ligaments were in a natural state. There were no remains of the crucial ligaments, or semi-lunar cartilages. The cartilages of the tibia, femur, and patella had entirely disappeared. The bones were carious on their exposed surfaces, but not otherwise diseased. The synovial membrane was free from all morbid appearances, except at the points of its attachment to the bones; where, in a few places, coagulated lymph had been effused on its surface.

The left knee, externally, had its natural appearance with respect both to form and size. The leg admitted of complete flexion and extension. On dissection, the ligaments and synovial membrane were found in a perfectly healthy state; but about one-third of the cartilaginous surfaces of the tibia and femur was destroyed by ulceration, the ulceration having taken place principally, but not entirely, near the circumference. The cartilage of the patella and the semi-lunar cartilages were entire; but the latter, in some parts, were softer than usual. The bones were free from disease. There was no pus or other fluid in the joint.

The dissection of this case, in which the ulceration of the cartilaginous surfaces was evidently the primary disease, explains well the nature of, at least, many cases of that species of white-swelling, which some authors have described; in which there is long-continued and severe pain in the joint, before any tumour is observable.

#### CASE XXXV.

William Bowles, eighteen years of age, was admitted into St. George's Hospital, on the 1st of December, 1810. He said that, about eleven months previous to his admission, he had been seized with a pain in his right knee, which was so severe as to keep him frequently awake at night. Six weeks after the pain attacked him, the joint for the first time became swollen. He now applied to a practitioner; under whose treatment, joined with perfect rest, the pain and swelling subsided, so that he was able to walk about. In the September following, having returned to his usual occupations, and used the joint a good deal, the pain and swelling returned.

At the time of his admission, the affected knee was about an inch and a half in circumference larger than the other. The swelling had the form of the articulating ends of the bones. The leg was half bent, and all attempts to give it motion gave great uneasiness. The pain which he experienced was great at all times, but particularly at night, when it very much disturbed his rest.

Soon after his admission, an abscess was discovered on the outside of the knee, which burst in the beginning of February, and discharged a large quantity of matter. On the 18th of March, the limb was removed by amputation.

On examining the joint, the greater part of the cartilaginous surfaces of the tibia, femur, and patella were found destroyed by ulceration. Where the cartilage was destroyed, the exposed bone was carious, and in some places covered by a thin layer of coagulated lymph; but in other respects the bone was free from disease. There was scarcely any remains of the semi-lunar cartilages. The joint contained pus, and the abscess in the joint had made its way into the external parts, through an ulcerated opening in the synovial membrane. The synovial membrane was in a natural state, except that, in a few places, there was a thin layer of coagulated lymph on its sur-



face, which evidently had been recently effused. The external lateral ligament was destroyed by the abscess; the other ligaments were entire.

In this case, the principal disease observed in the dissection, was the ulcerated state of the cartilages. There was no affection of the synovial membrane beyond what might be considered as arising from the formation of pus in the joint, and the bursting of the abscess externally. Where inflammation of this membrane is the primary disease, swelling takes place often in a few hours, always within two or three days from the beginning of the attack; whereas, in this instance, the constant answer which the patient gave to the repeated inquiries made of him, was, that he had had violent pain for six weeks before the joint was observed to be enlarged. From all these circumstances, we may conclude that, in this case, as well as in the last, the cartilages were the original seat of the disease, and that the morbid appearances observed in the soft parts were the consequence of the formation of the abscess in the joint.

The same conclusion may be drawn respecting the cases which follow.

#### CASE XXXVI.

Mary Anderson, twenty-eight years of age, was admitted into St. George's Hospital, on the 6th of April, 1815.

At this time, she complained of intense pain in the right knee, which was particularly severe at night, so as exceedingly to interrupt her rest. The pain was referred principally to the head of the tibia. There was a slight swelling of the joint, having the form of the articulating ends of the bones, and not giving to the hand the smallest sense of fluctuation. The leg admitted of being moved on the thigh, but all motion aggravated the pain.

No more particular account of the previous history of the case could be procured than the following:—that she had laboured under pains of the right knee for nearly six years, which had been occasionally relieved; and that, in the first instance, the pain had been unattended by swelling.

Immediately on her admission, an issue was made with caustic, on each side of the patella. On the 9th of April the pain had very much abated. The issues were kept open by the occasional application of caustic; and the pains very soon left her, and the swelling diminished.

About the 8th of June, she began to experience a return of the pains in the knee, and in the course of four or five days they were so severe as to keep her awake at night. There were convulsive startings of the limb, and the joint was swollen in a greater degree than formerly. The pains increased in violence, and her health began to suffer considerably. On the 3d of July the limb was amputated.

On examining the knee, some lymph and serum were found effused into the cellular membranes external to it.

The cavity of the joint contained about half an ounce of thin purulent fluid; The cartilage covering the patella was, in some parts, in a natural state; in others, it had the fibrous structure, which I have described in a former part of this chapter; and, in others, it was completely destroyed by ulceration, so as to expose the surface of the bone. The cartilage covering the articulating extremity of the femur presented the same variety of appearances. On the inside there was a spot of some extent, which, instead of cartilage, was covered by a kind of membrane, resembling the substance of adhesions, but somewhat more dense in its structure; as if the cartilage had been formerly destroyed at this part, and coagulated lymph had been effused on the ulcerated surface of the bone, which had afterwards become organized.

The cartilages of the tibia were ulcerated for a very small extent.

The synovial membrane in general was in a very natural state. In some places it was slightly inflamed. On the outside of the joint, it was inflamed in a greater degree than elsewhere, and thickened, and had begun to ulcerate, evidently in consequence of the abscess in the joint having begun to make its way to the external surface.

The bones possessed their natural texture and hardness.

### CASE XXXVII.

Jane Banister, forty years of age, was admitted into St. George's Hospital, in September, 1810, on account of a disease in her right foot. She gave the following account of her case:—

In the September of the preceding year she wrenched her instep, and soon afterwards experienced violent pain in this part, so that she was unable to stand on that foot, and her rest was much disturbed at night. The pain continued very severe, and, at the end of four months, she observed for the first time, a slight swelling on the inside of the foot. This was occasioned by an abscess, which was opened by her medical attendant in the April following.

At the time of her admission into the hospital, the whole foot was swollen, and she complained of violent pain in it. The abscess continued open, discharging a small quantity of pus. On introducing a probe into the orifice, an exposed surface of bone was felt. Several applications were made without benefit, and the leg was amputated on the 25th of February, 1811.

On examining the amputated foot, the cartilages of the joint formed by the astragalus and os naviculare were found destroyed by ulceration, and a portion of the astragalus was dead, and undergoing the process of exfoliation. The cartilages of the joints formed by the cuneiform bones with each other, with the os naviculare, and with the metatarsal bones, were in like manner destroyed, and the exposed surfaces of the bone were carious. The abscess communicated with



the carious joints. The ligaments and synovial membrane were in a natural state, except in a few spots, where they were destroyed by the abscess. The bones possessed their natural texture and hardness. The cellular membrane of the foot contained coagulated lymph and serum.

### CASE XXXVIII.

Thomas Herbert, fifty-eight years of age, was admitted into St. George's Hospital, on the 14th of September, 1825.

He complained of pain and tenderness of the left knee. The leg was kept in the half-bent posture; and there was a severe aggravation of the pain on every attempt to move it. There was a slight swelling of the joint, not arising from fluid collected into its cavity, but from an effusion into the cellular texture external to it. The man was in ill health, and his memory was impaired, so that no history of his case could be procured.

Blisters were applied and kept open: but notwithstanding these remedies, joined with a state of complete repose, an abscess presented itself on the outside of the joint, and burst, discharging a large quantity of pus. It now became a question whether the limb should not be removed by amputation; but an attack of erysipelas prevented the operation. The patient gradually became more exhausted, and died in the beginning of December.

On dissection, the cartilage of the patella of the left knee was found in some parts destroyed, so as to expose the surface of the bone; while in other parts it had lost its natural structure, and was converted into a fibrous substance.

The cartilages of the head of the tibia and condyles of the femur, were almost every where destroyed, so that extensive surfaces of carious bone were exposed.

The abscess did not communicate with the general cavity of the joint, but was limited to the portion of it formed by the external condyle of the femur and the external articulating surface of the tibia; and here the cancellous structure of the bones adjoining the ulcerated surfaces was of a dark colour. Every where else the bones belonging to the diseased joint retained their natural texture and hardness.

In the right knee, which had been supposed, while the patient lived, to be free from disease, the cartilage of the patella had, in some parts, entirely disappeared, so that the bone had become exposed: in other parts, it was converted into a fibrous substance; and in other parts, it retained its natural structure and appearance.

The cartilages of the femur and tibia of the right knee were somewhat thinner than natural, and of a yellowish-white colour; but they were entire, except on the edge of one of the condyles of the femur, where the cartilage was in a state of incipient ulceration, and the surface of the bone was of a red colour in a spot about one-third of an inch in diameter. The synovial membrane was in a natural state.

The following case affords an example of ulceration of the articular cartilages occurring as a secondary disease, the primary disease having had the character of a rheumatic inflammation of the bone and periosteum. I have seen a few other cases apparently similar to this, but in which no opportunity occurred of ascertaining the exact nature of the disease by dissection. The history of one of these will be found among the cases related hereafter.

### CASE XXXIX.

Sarah Holder, twenty-two years of age, was admitted into St. George's Hospital, on the 26th of July, 1827, with a diffused swelling extending from the upper part of the right thigh to the leg, a little below the knee. The swelling was most conspicuous in the immediate neighbourhood of the knee-joint; and from thence gradually became diminished, having no defined termination either above or below. It was somewhat elastic, the skin over it appearing glossy and tense, but not redder than natural. The patient complained of exquisite pain, especially on pressure. The pain was also aggravated by every motion of the knee; nevertheless it was principally referred, not to the joint itself, but to the thigh bone immediately above it. In addition to these local symptoms, the pulse was frequent; the tongue furred, and rather brown; the skin hot; and the countenance anxious and expressive of much suffering. The condition of the patient was altogether a good deal similar to that which might be produced by severe rheumatic inflammation of the bone and periosteum; and the history of the case seemed to justify the opinion that such was the nature of the disease, as the symptoms had begun without any precursory rigor on the day previous to her admission, and had been preceded, for an entire month, by rheumatic pains in the elbows, and shoulders.

Saline and antimonial medicines were exhibited: leeches were freely applied to the limb, and on the 28th of July, a pill, containing two grains of calomel and half a grain of opium, was exhibited twice daily. Under this treatment the gums became slightly affected, and the symptoms gradually abated. On the 3d of August, the mercurial pill was given only once daily, and, in the course of a few days more, it was altogether discontinued, blisters being at the same time applied to the limb.

August 13. The swelling and pain had entirely left the upper part of the thigh; but there were still some remains of both in the immediate neighbourhood of the knee. Altogether she was in a much better state with respect to the local symptoms, and the general health was improving.

August 15. After an accidental exposure to cold, she had a rigor, followed by fever; and, at the same time, there was a recurrence of pain and swelling in the neighbourhood of the right knee, with some degree of pain and tenderness extending up the thigh and down the leg. The swelling had the same character as formerly.



August 20. She continued in nearly the same state, with painful startings of the limb, and perspirations at night. Pulse very frequent. She was directed to resume the use of calomel and opium.

Sept. 2. There was no material improvement as to the local symptoms: a blister was applied to the knee.

She continued in nearly the same state, sometimes a little better, sometimes a little worse, with a very frequent pulse, and the general health, on the whole, declining, until the 7th of October; when an issue was made with caustic in the neighbourhood of the knee. The issue seemed to occasion some abatement of the local symptoms. Her bodily powers, however, continued to decline, and she became affected with an ulcer over the sacrum, the result of long-continued pressure.

Oct. 14. She complained of severe pain in the left shoulder.

Oct. 15. She was seized with vomiting and purging, accompanied with pain and tenderness of the abdomen and cold extremities. Pulse 140. At midnight she had a severe rigor.

The vomiting and purging continued, in spite of the remedies which were employed. In the afternoon of October 16, she had another rigor, and in about two hours afterwards she expired.

On examining the body, the knee-joint was found to contain neither pus nor synovia. The cartilage of all the bones which enter into the composition of the joint were ulcerated in several places, especially that of the inner condyle of the femur. A slight extravasation of blood had taken place into the cavity of the joint, apparently from the surfaces of the bone exposed in consequence of the ulceration of the cartilages. The periosteum could be easily peeled off the surface of the femur, and the bone underneath appeared to be more vascular than is natural. The stomach was distended with an acid fluid of a green colour, similar to what had been vomited on the day preceding death. The gall bladder was full of a very pale yellow fluid. There were no other morbid appearances.

The left shoulder to which pain had been referred for a short time previous to death, was carefully examined, but no disease was detected in it.

---

It would be needless to add to the foregoing list an account of other cases, in which the disease was in a still more advanced stage. The progress of it, in other joints, corresponds with that in the hip; and whatever may be the joint affected, there is ultimately the same complete destruction of the cartilages, and the same extensive ravages are committed among the bones and soft parts.

## SECTION II.

## ON THE SYMPTOMS OF THIS DISEASE.

THE ulceration of the articular cartilages may occur at any period of life; but it is most frequent in those who have passed the age of puberty, and who are under thirty or thirty-five years of age. We meet with it, however, sometimes in young children, and at other times in old persons. In general, the disease is confined to a single joint; but occasionally two or three joints are affected in the same individual, either at the same time, or in succession. Sometimes the patient traces the beginning of his symptoms to a local injury; but for the most part no cause can be assigned for the complaint, and often, the cause to which it is attributed appears to be imaginary rather than real.

It is this disease which forms the great majority of those cases of caries of the hip-joint which occur in adult persons; whereas, in children, the hip-joint is principally affected by that scrofulous disease affecting the cancellous structure of the bones, which will be described hereafter. These two classes of cases have many circumstances in common; and as I shall, in the present chapter, enter into a minute history of the progress of the former, I shall be enabled, in the next chapter, to confine my observations respecting the latter chiefly to those points of difference, on which our diagnosis, so far as it can be made must mainly depend.

Where the cartilages of the hip are ulcerated, as a consequence of inflammation of the synovial membrane, the peculiar symptoms, which it presents, are preceded by those of the last-mentioned disease; otherwise, the only symptoms met with for some time, are pain, and a slight degree of lameness in the lower limb. The pain at first is trifling, and only occasional; afterwards becoming severe and constant. It resembles a good deal the pain of rheumatism, since it often has no certain seat; but is referred to different parts of the limb in different individuals, and even in the same individual at different periods. As the disease advances, the pain becomes exceedingly severe, particularly at night, when the patient is continually roused from his sleep by painful startings of the limb. Sometimes he experiences some degree of relief from the pain in a particular position of the joint, and in no other. A patient in St. George's Hospital never obtained any rest, except when he had placed himself on the edge of the bedstead, with his feet on the ground, and resting his body on a pillow, in a position between that of lying and sitting. Another patient was seen, night and day, crouching on his knees and elbows.

As the pain increases in intensity, it is more confined in its situation. In the greater number of instances, it is referred to the hip and



the knee also ; and the pain in the knee is generally the most severe of the two. At other times, there is pain in the knee, and none in the hip. Sometimes there is pain referred to the inside of the thigh ; or even to the foot. Wherever the pain is situated, it is aggravated by the motion of the joint ; but it is aggravated in a still greater degree by whatever occasions pressure of the ulcerated cartilagenous surfaces against each other. Hence the patient is unable to support the weight of the body on the affected limb ; and if he be placed on an even surface in a horizontal position, and the hand of the surgeon be applied to the heel, so as to press the head of the femur against the concavity of the acetabulum, violent pain is the consequence ; although this be done in so careful a manner that not the smallest degree of motion is given to the hip-joint. This circumstance is well deserving of attention ; and no one should attempt to give an opinion as to the nature of a disease connected with the hip, without having made an examination in the manner which has been just described.

Soon after the commencement of the complaint, the hip-joint is found to be tender, whenever pressure is made on it, either before or behind. The absorbent glands in the groin become enlarged, and sometimes suppurate. Occasionally there is a slight degree of general tumefaction in the groin. In this there is nothing remarkable, since we must suppose that a disease going on within the articulation must ultimately occasion some degree of inflammation in the neighbouring parts. But it is a curious circumstance, that in some cases there is tenderness of those parts to which, though not diseased themselves, the pain is referred from sympathy with the disease in the hip. I have observed this in the knee several times ; and I have also seen a slight degree of puffy swelling of this joint, where pain was referred to it, in consequence of disease in the hip. These facts correspond to what may be observed in some other cases, where pain is referred to a sound part, in consequence of a sympathy existing between it and some other part that labours under disease ; for example, I have known the passage of a calculus down the ureter to occasion not only pain, but tenderness, swelling, and no trifling degree of inflammation of the testicle.

When the disease has existed for some time, the nates undergo a remarkable alteration in their form. They become wasted and less prominent ; so that, instead of their usual convexity, they present the appearance of a flattened surface ; they are flaccid to the touch, and hang more loosely towards the lower edge ; and they have the appearance of being wider than those of the other side. In a very few cases, in the advanced stage of the disease, the nates are really wider, in consequence of the acetabulum being filled with coagulated lymph and matter, and the head of the femur being pushed out of its natural situation. But, in general, the increased breadth of the nates is only apparent, and, on accurate measurement, no difference in this respect will be found between the nates of one side and those of the other. The alteration in the figure of the parts, in these cases, may arise partly from the position in which the patient usually places himself when he

stands erect; but the principal cause to which it is to be attributed, is the wasting of the large fleshy bellies of the glutæi muscles from want of use; and this has been ascertained, by repeated and accurate examinations of the living, and numerous dissections of the dead, body.\*

Another symptom which occurs in this disease, is an alteration in the length of the limb. 1st, In the early stage of the disease the patient often complains, that the limb on the affected side is longer than the other. This cannot be explained on the supposition of the acetabulum being filled with pus, or solid substance, since this would cause the head of the femur to be pushed outwards rather than downwards. The fact is, that there is only an apparent, and no real, elongation of the limb. If the patient be placed on his back in the horizontal position, with the thighs parallel to each other, the foot on the diseased side may at first appear as much as two or three inches lower than the opposite foot; but, if the distance be accurately measured from the anterior superior spinous process of the illium of the patella, no difference is perceptible. The apparent elongation is produced by the position of the pelvis being altered, in such a way that the crista of one illium is visibly depressed below the level of that of the other. It is easy to understand how this effect is produced, by observing the position in which the patient places himself when he stands erect. He supports the weight of his body on the sound limb; the hip and knee of which are, in consequence, maintained in the state of extension. At the same time the opposite limb is inclined forward, and the foot on the side of the disease is placed on the ground, considerably anteriorly to the other; not for the purpose of supporting the superincumbent weight, but for that of keeping the person steady and preserving the equilibrium. Of course, this cannot be done without the pelvis on the same side being depressed. The inclination of the pelvis is necessarily attended with a lateral curvature of the spine; and hence it happens that one shoulder is higher than the other, and that the whole figure is in some degree distorted. All these symptoms will disappear in the course of a few weeks, if the patient be confined to his bed in the supine and horizontal position; except in some instances, where, in consequence of their having occurred in a young and growing person, and having already been allowed to exist for a considerable time, the shape of the parts has become adapted to their new situation. Under these circumstances, the alteration of the figure may continue during life.

2. In a few cases, where the patient is in the erect position, it may be observed that the foot which belongs to the affected limb is not inclined more forward than the other, but that the toes only are in con-

\* This alteration in the form of the nates is a symptom, but it is not in itself to be considered as a certain diagnostic mark of disease in the hip-joint; as it may be observed in other cases, where, from any cause, the glutæi muscles have been for a considerable time in a state of inaction. Thus children are subject to a paralytic state of the muscles of the lower limb; and in this complaint, if the muscles are affected as high as the pelvis, the nates present to the eye the same appearance. It may be noticed also where there is disease of the thigh-bone, or where, from any other cause, the motion of the hip is painful and difficult.



tact with the ground, and the heel raised; at the same time that the hip and knee are a little bent. This answers to the patient the same purpose of enabling him to throw the weight of his body on the other foot; but it produces an inclination of the pelvis in the opposite direction. The crista of the ilium is higher than natural, and there is an apparent shortening, instead of elongation, of the limb on the side of the disease.

3. In the very advanced stage of the disease, when the head of the femur has been completely destroyed by ulceration, there is nothing to prevent the muscles from pulling the bone upwards. This may be compared to a case of fractured neck of the femur. The limb is not only apparently, but it is really, shortened; the foot may be rotated inwards, but, if left to itself, it generally is turned outwards.

4. In other cases, the limb is shortened; the thigh is bent forwards; the toes are turned inwards, and do not admit of being turned outwards; and there is every symptom of a dislocation of the hip upwards and outwards. The following case fully explains the cause of these appearances.

#### CASE XL.

—Taylor, a middle-aged man, was admitted into St. George's Hospital in the autumn of 1805, on account of a disease in his left hip. He laboured also under other complaints; and he died in the February following.

On inspecting the body, the soft parts in the neighbourhood of the joint were found slightly inflamed, and coagulated lymph had been effused into the cellular membrane round the capsular ligament.

There were no remains of the round ligament.

The cartilages had been destroyed by ulceration, except in a few spots.

The bones, on their exposed surfaces, were carious; but they retained their natural form and size. The acetabulum was almost completely filled with pus and coagulated lymph; the latter adhering to the carious bone, and having become highly vascular. The head of the femur was lodged on the dorsum of the ilium. The capsular ligament and synovial membrane were much dilated; and, at the superior part, their attachment to the bone was thrust upwards, so that, although the head of the femur was no longer in the acetabulum, it was still within the cavity of the joint.

Since the man did not attribute this disease to any local injury, we may conclude that the ulceration of the cartilage was the primary affection, and that the dislocation had been produced in consequence of the destruction of the round ligament, and of the head of the femur having been first pushed outwards by the coagulated lymph and pus which occupied the cavity of the joint, and then drawn upwards by the action of the muscles inserted into the great trochanter.\*

\* This case affords one example of the dislocation of the hip from an internal

The shortening of the limb, which takes place in the advanced stage of the disease, is usually, but not always, the precursor of abscess. The formation is also indicated by an aggravation of pain, by more frequent spasms of the muscles, by a greater wasting of the whole limb, and by the circumstance of the thigh becoming bent forward, and being incapable of extension without such an increase of the patient's sufferings as he will be unable to endure. At the same time the pulse becomes frequent, the tongue furred, and the whole system is in a state of preturnatural excitement. The abscess sometimes shows itself in the form of a large tumour over the *vastus externus* muscle; sometimes on the inside of the thigh, near the middle; and occasionally two or three abscesses appear in different parts, and burst in succession. The abscesses discharge a large quantity of thin pus; and, in the worst cases, a copious suppuration continues, until the powers of the patient are exhausted; so that, enfeebled and emaciated, he sinks under the symptoms of a hectic fever. That an adult should recover under these circumstances, is so rare an occurrence, that the surgeon can never be justified in giving any but the most unfavourable prognosis. Children recover more frequently in this advanced stage of the disease; but seldom without a complete ankylosis of the joint. If suppuration has not taken place, it generally, but not always, happens, that the limb, after the cure, regains its natural degree of mobility.\*

When the cartilages of the knee are ulcerated, there is pain in the affected joint. At first, it is slight and only occasional, and, in the early stage of the disease, it is completely relieved by the limb remaining in a state of rest for a few days; but it returns as soon as the patient resumes the exercise of the limb. By degrees the pain becomes constant and very severe, particularly at night, when it disturbs the patient by continually rousing him from his sleep. The pain is referred principally to the inside of the head of the tibia; but sometimes a slighter degree of pain extends down the whole of that bone. The pain is aggravated by motion, so that the patient keeps the limb constantly in one position, and generally half bent: and he never attempts to support the weight of the body on the foot of this side.

The ulceration of the cartilages of the knee differs, with respect to

cause, which some surgical writers have described. Other examples of this kind of dislocation occur in cases of inflammation of the synovial membrane, as has been explained in a former chapter.

\* The morbid affections of the hip most liable to be confounded with that which has been above described, are the following:—

1. Inflammation of the synovial membrane.
2. Scrofulous disease, having its origin in the bones, of which I shall speak hereafter.
3. A painful nervous affection, which occurs chiefly in young females disposed to hysteria; which will also be noticed in a subsequent chapter.
4. Affections of the sciatic nerve, of the upper part of the femur, and other diseases external to the hip, are not unfrequently mistaken for disease in the joint itself, especially by surgeons of limited experience, who are misled by the wasting of the glutæi muscles, and the flattened appearance of the nates, which may occur in any one of these cases.



its symptoms, from inflammation of the synovial membrane, in this,—that the pain in the former is slight in the beginning, and gradually becomes very intense, which is the very reverse of what happens in the latter. But there is another circumstance, which forms a remarkable distinction between the ulceration of the cartilages, and most other diseases to which this joint is liable. The pain, in the first instance, is unattended by any evident swelling; which comes on never in less than four or five weeks, and often not until several months have elapsed, from the commencement of the disease. The reason of this is too manifest to require explanation, and it is equally unnecessary to point out the importance of it, as affording the means of making a more ready diagnosis. We must not, indeed, conclude indiscriminately, whenever there is a slight pain in the knee, unattended by swelling, that the cartilages are in a state of ulceration, since this symptom may equally arise from inflammation of the bones themselves; of the ligaments; of the fatty substance of the joint; or from simple nervous affection: and instances will occur to every surgeon, where there is reason to believe that the above-mentioned symptom arises from one or other of these causes. But when the pain continues to increase, and at last becomes very severe; when it is aggravated by the motion of the joint, and by the pressure of the articulating surfaces against each other; and when, after a time, a slight tumefaction takes place, such as I shall presently describe; we may conclude that the disease consists in an ulceration of the cartilages; and, in all such cases which have come under my own observation, their subsequent progress, and the morbid appearances presented by dissection, where an opportunity has occurred of observing them, have fully justified this conclusion.

The swelling which attends this disease, in the knee, differs from that which occurs in either of those diseases of the synovial membrane which I have formerly described. It arises from a slight degree of inflammation having taken place in the cellular membrane external to the joint, in consequence of the disease within it. The swelling is usually trifling, appearing greater than it really is, in consequence of the wasting of the muscles of the limb. It has the form of the articulating ends of the bones; that is, the natural form of the joint. No fluctuation is perceptible, as where the synovial membrane is inflamed; nor is there the peculiar elasticity which exists where the synovial membrane has undergone a morbid alteration of structure.

But a few cases occur in which this disease is attended with a collection of fluid in the joint, and in which, therefore, the tumour has a form different from that which has been described, and giving to the hand a distinct sense of fluctuation.

1st. Inflammation of the synovial membrane may terminate in ulceration of the cartilages; in which case it sometimes happens, that the fluid, secreted into the cavity of the joint, in consequence of the primary disease, is absorbed; while, in other cases it is *not* absorbed before the peculiar symptoms of the secondary disease have shown themselves; or,

2dly. This order may be reversed; inflammation of the synovial membrane being the secondary disease, ulceration of the cartilages having preceded it, and the effusion of synovia into the joint being the consequence of it. This I supposed to have happened in the case of John Child; which will be related hereafter.

3dly. In an advanced stage of ulceration of the cartilages, where an abscess is formed, it occasions ulceration of the soft parts, and usually makes its way to the skin; but sometimes the pus is collected in the joint, distending the synovial membrane, and causing a tumour very similar to that which would arise from it being distended with synovia. In these cases, the surgeon must form his diagnosis, by attending to the previous history; by observing the degree and the kind of pain of which the patient complains; and the state of his general health; and by bearing in mind this circumstance, that blisters, combined with rest, very seldom fail in procuring absorption of the too abundant synovia, and that they never cause the absorption of pus.

As the ulceration of the cartilages is sometimes followed by dislocation of the hip; so we find that dislocation of the knee occasionally takes place from the same cause. Where there has been considerable destruction of the soft parts, in consequence of ulceration extending to them, the head of the tibia is gradually drawn backwards by the action of the flexor muscles, and lodged in the ham; and I have ever known this to happen where abscess has never formed, the patient ultimately recovering with a stiff joint and disfigured limb. In such a case, the condyles of the femur make an unusual projection, and the articulating surfaces of the bones are partially, or entirely, separated from each other.

The symptoms produced by the ulceration of the cartilages of other joints correspond very nearly with those already described. The principal diagnostic mark is the pain, which is experienced in the beginning unattended by swelling, and which is invariably increased by the pressure of the articulating surfaces against each other. The pain is referred to the part which is the actual seat of the disease: but, where the elbow is affected, the more violent pain in this joint is accompanied by a slighter degree of pain in the lower part of the fore-arm and wrist; and where the disease is in the shoulder, there is often a painful sensation, extending down the whole of the bone of the arm. In cases of ulceration of the cartilages of the shoulder, the joint is smaller than natural, in consequence of the wasting of the deltoid muscle. When an abscess forms in connexion with this joint, it often assumes a somewhat singular appearance, when it has first penetrated through the deltoid muscle; so that I have known it more than once to be mistaken for an encysted tumour. In the advanced stage of the disease in the shoulder, the joint is liable to be dislocated in the direction forwards.

Sometimes the dislocation is only occasional, the head of the bone slipping forwards, so as to make a visible projection, in certain motions of the arm, and again returning to its place; at other times, the dislocation is permanent, the head of the bone resting on the anterior



margin of the glenoid cavity of the scapula, and gradually making a new cavity for itself in this situation.

Whatever joint is the seat of the disease, the formation of abscess is always attended with an aggravation of all the symptoms. But the degree in which the general system is disturbed, when suppuration is established, depends on various circumstances; such as the age and powers of the patient; the size of the affected joint; and its situation. An abscess connected with a deep-seated joint occasions more extensive mischief of the soft parts, before it reaches the surface, and, therefore, is productive of more serious consequences, than one which is connected with a joint which is situated superficially.

The progress of the ulceration of the cartilages varies, with respect to time, in different cases, but it is generally tedious. In one case, in which violent pain had existed in the knee, with little or no swelling, for two years and a half previous to amputation, I had an opportunity of examining the diseased joint, and found the cartilages destroyed for only a small extent; a drachm and a half of pus in the articular cavity; and no morbid appearances of the soft parts, with the exception of a very slight inflammation, which had been induced in the synovial membrane, and the effusion of a minute quantity of coagulated lymph into the cellular texture on its internal surface. In another case, the pains in the lower limb had existed for a whole year, before they were sufficient to attract the patient's serious attention. No pus was formed in the joint; and the ultimate recovery was complete, without the smallest detriment to the motion of the limb. But at other times, the progress of the disease is much more rapid. There was a patient in St. George's Hospital, in whom, in the course of four months, the destruction of the head of the femur and acetabulum was such, as to occasion a real shortening of the limb to the extent of an inch.

---

## SECTION III.

### ON THE TREATMENT.

It is, of course, of importance that attention should be paid to the general health, and that such internal remedies should be exhibited as are indicated by the peculiar circumstance of each individual case. If there be a febrile excitement of the system, saline and antimonial medicines, and occasional purgatives are proper. Where the patient, in the advanced stage of the disease, finds his bodily powers enfeebled, and is troubled with nocturnal perspirations, bark, or some other vegetable tonic, combined with mineral acids, may be given with advantage; and opium, or extract of poppies, may be administered to those whose rest is disturbed by attacks of excruciating pain. Where the disease in the joint is attended with a disordered condition of the functions of

the digestive organs, it is undoubtedly proper to endeavour by suitable remedies to restore these to a more healthy state.

I cannot doubt that a course of sarsaparilla, properly prepared, and administered in full doses, is often productive of the greatest benefit; and still greater and more immediate relief is sometimes obtained from the exhibition of mercury. For this purpose I have usually had recourse to calomel, combined with extract of hyoscyamus or opium, one or two grains being given twice or three times daily, so as to affect the gums moderately. It seems probable that such specific remedies are especially adapted to those cases in which the ulceration of the cartilage is connected with a chronic inflammation of the surface of the bone beneath. Analogy will lead us to expect that the hydriodate of potash may be useful under the same circumstances. Those thickenings of the periosteum, called nodes, are for the most part preceded by a chronic inflammation of the bone which the diseased periosteum covers, and these disappear equally under the use of the hydriodate of potash, mercury, and sarsaparilla.

When the cartilages of a joint are ulcerated, it may well be supposed that the motion of their surfaces on each other must be favourable to the progress of ulceration. I have known some cases, in which rest alone was sufficient to produce a cure. In all cases, the symptoms of the disease are aggravated by any considerable exercise; and we may, therefore, conclude that the keeping the limb in a state of the most perfect quietude, is a very important, if not the most important, circumstance to be attended to in the treatment. When the affected joint is in the lower limb, the patient should be confined to the bed, or, at any rate, to the sofa. In most instances, some contrivance may be employed having for its object to maintain the diseased joint in a state of absolute immobility; and this should be always regarded as one of the principal points to be attended to in the surgical treatment. The apparatus made use of for this purpose should be such as is efficient, and, at the same time, simple, light, and commodious to the patient. The plasters and bandages recommended by Mr. Scott, in the work to which I have formerly referred, operate, as I conceive, on the principle which has been here laid down, and are often productive of benefit. But according to my experience, splints of leather, applied after being softened by heat and moisture, and then allowed to dry on the limb, are much preferable to all other expedients. They must exactly fit the joint, and therefore are easy to be worn: they may be retained in their proper place with any little pressure on the parts which they enclose; and they admit of being taken off and re-applied with the greatest ease.

Issues made with caustic\* have been recommended by many prac-

\* The immediate relief which sometimes follows the application of caustic to the skin, or the surface of an issue, when the limb is under precisely the same circumstances as before with respect to rest, and the return of the symptoms which, in many instances, follows the early healing of an issue, sufficiently proves the efficacy of this remedy. It may be difficult to explain the *modus operandi*; but what happens in these cases seems to bear no distant analogy to the suspen-



tioners for the cure of diseased joints; but, as far as I know, no one has attempted to point out the particular class of cases, to which this remedy is particularly applicable. I have employed caustic issues, and seen them employed, in a great number and variety of instances, and have found them to be usually productive of singular benefit where the cartilages are in a state of ulceration, and to be of much more service in these than in the other morbid affections to which the joints are liable. Setons and blisters, kept open by means of the savine cerate, appear to operate nearly in the same manner as caustic issues, and may be used with advantage in the same description of cases.\*

Local blood-letting, or even bleeding from the arm, is occasionally productive of advantage in the beginning; especially in cases, which occur chiefly in the hospital practice, in which the patient, from too freely exercising the limb, has brought on inflammation of the ulcerated surfaces, occasioning an aggravation of the pain, and usually some degree of fever.

In the early stage, the warm bath is sometimes of service. At least, it is capable of relieving the symptoms, if not of stopping the progress of the disease.

Plasters made of gum ammoniac, and others of a similar nature; embrocations and liniments of all kinds, are entirely inefficacious. Friction is invariably injurious.

I have shown, in a former section, that ulceration of the articular cartilages may take place to a considerable extent, without suppuration being established. This is a circumstance of much interest in pathology, and in a practical point of view of great importance. The prospect of a cure which the employment of any remedies affords is undoubtedly much greater where abscess does not exist, than where it does; and the prognosis, which the surgeon gives, must depend in a great degree on the opinion which he is led to form on this subject.

Having premised these general observations, I shall proceed to offer some practical remarks: first, on the treatment of this disease in

sion of gonorrhœa by the occurrence of inflammation of the testicle, or the metastasis of gout from the stomach to the foot. Issues are employed in surgery for the purpose of stopping the morbid actions of the animal body; but it is probable that, if made of too great an extent, they would interfere with its natural actions also. In a guinea-pig, a large abscess took place of one leg and thigh, in consequence of a local injury. The formation of the abscess completely stopped the growth of the claws on the foot of this side. They wore away at the points, without being regenerated at the base; became short and dry, and readily cracked and splintered; while, on the foot of the opposite limb, they continued to grow as usual, and possessed their ordinary appearance.

\* It may be expected that I should, in this place, offer some remarks on the effects of the application of the actual cautery in the form of the hot iron, or the moxa, which has been recommended, at different times, for the relief of some cases of diseased joints. I do not, however, feel myself warranted in giving any confident opinion as to the comparative efficacy of issues made by the caustic, and those made by the cautery; my experience of the latter being much more limited than that of the former. What I have seen, however, does not lead me to believe that the cautery is in any respect more efficient than the caustic; and there are, certainly, some considerable objections to its use, to which the caustic is not liable.

the hip, and afterwards in other joints, without reference to suppuration having taken place; secondly, on the plan, which should be adopted where suppuration is established, and there is a collection of pus communicating with the articular cavity.

When the cartilages of the hip are ulcerated, the patient should be confined to his bed or couch, being never allowed to move from it on any occasion. If left to himself, he is generally inclined to lie on the side opposite to that of the disease. There are, however, good reasons why this position should be avoided, if possible. It necessarily distorts the pelvis, and increases the disposition to a lateral curvature of the spine. It also, in those cases in which the round ligament of the joints is destroyed, facilitates the escape of the head of the femur from the acetabulum, and the production of dislocation. Something may be done towards preventing this last effect, by interposing a pillow, or thick cushion, between the knees; and it is difficult to do more than this, after the patient has been already lying on his side for a considerable time: otherwise he should be placed on one of the bedsteads invented by Mr. Earle, lying on his back, with the shoulders and thighs somewhat elevated, and the latter as nearly as possible parallel to each other. This supercedes the necessity of having recourse to splints and bandages, and, with a view to the confinement of the hip-joint, is all that is required in the early stage of the disease.\* At a later period when, in consequence of the extensive destruction of the articulation, the muscles begin to cause a shortening or retraction of the limb, I have found great advantage to arise from the constant application of a moderate extending force, operating in such a manner as to counteract the action of the muscles. For this purpose an upright piece of wood may be fixed to the foot of the bedstead, opposite the diseased limb, having a pulley at the upper part. A bandage may be placed round the thigh above the condyle, with a cord attached to it, passing over the pulley, and supporting a small weight at its other extremity. I will not say that the effect of such a contrivance is to prevent the shortening of the limb altogether; but I am satisfied that it will, in a number of instances, render it less than it would have been otherwise, at the same time preventing, or very much diminishing that excessive aggravation of the patient's sufferings with which the shortening of the limb is usually accompanied.

The use of the bedstead which I have mentioned is quite compatible with the employment of any method of counter-irritation which may seem to be best adapted to the peculiar circumstances of the individual case.

In children, blisters are capable of affording complete relief. They may be applied, of a small size, on the nates, round the great trochanter, and in the groin. A blister, kept open by means of the savine cerate, is usually more efficacious in this disease than a number of blisters applied and healed in succession.

\* On some occasions, however, it is convenient to fix the pelvis by a strap or bandage, passing over it, from one side of the bedstead to the other: and even the thigh may be fixed in the same manner.



In adults, the same treatment is useful in a very early stage of the disease; but, in the more advanced stage, issues made with caustic appear to be much more efficacious, and to be attended, on the whole, with less inconvenience to the patient.

The hollow behind the great trochanter of the femur, is, in many respects, the most convenient situation for the application of the caustic; but, in some cases, the application of it on the outside of the hip is attended with better effects. The skin of this part is, in fact, nearer to the joint than the skin behind; and there are some grounds for the opinion, that issues are more efficacious when made near to the seat of the disease than when made at a distance from it.\* The skin in the groin is still nearer to the hip than that on the outside, but the larger vessels and nerves of the thigh forbid the use of the caustic at this part. A slough may be made with the caustic potash in the adult, half an inch in breadth, and two inches in length, behind the great trochanter. If this fails in giving relief, a second slough of a smaller size may be made on the anterior edge of the tensor vaginae femoris muscle; and, in some instances, though no relief is afforded by the first issue, there is great relief from the second.

The good derived from the issue does not seem to be in proportion to the quantity of pus discharged from its surface. It has been observed by others, that sometimes more abatement of the symptoms is produced in the first few days after the caustic is applied, and before the slough has separated, than in several weeks afterwards. This circumstance first led me, instead of employing beans for this purpose, to keep the issue open simply by rubbing the surface occasionally with the caustic potash, or with the sulphate of copper; and, after an extensive trial of both methods, the latter has appeared to be decidedly preferable to the former. The pain produced by the caustic is very considerable, but the relief of the symptoms is such, that I have known patients to be in the habit of making the application themselves, saying, that "they knew they should be better by the next morning." Besides, the issue managed in this way is more easily dressed than where beans are used; and the inconvenience arising from the beans slipping out under the adhesive plaster, and from any accidental pressure of them against the sore surface, is avoided.

The cases in which complete relief of the symptoms immediately follows the making the issue, are not very numerous. In general, there is some degree of abatement on the caustic being applied; and, and in a few weeks afterwards, (provided that suppuration has not taken place,) if the patient continues in a state of quietude, the pain

\* "I have for many years applied caustics above and below the internal condyle of the thigh-bone, for white swellings of the knee, with various success; and I have remarked that where this plan disappointed my hopes, and where a suppuration took place in the joint, the inflammation in almost every case arose, and the matter collected made its way outwards, on the external side of the knee. Observing this fact repeatedly, I was led to believe that the caustic, in the manner I used it, checked the progress of the disease as far as it had influence; but that the influence was not sufficient to pervade the whole cavity of the joint."—Ford on the Hip-joint, p. 194, first edition.

entirely leaves him. Where the pain is exceedingly severe (as it sometimes is, so as to prevent sleep during many successive nights), it is very desirable that some method should be adopted, capable of affording more speedy relief than that which can usually be obtained from the application of the caustic. As I have already stated, if there be reason to believe that the ulcerated surfaces are in a state of inflammation, in consequence of the joint having been too much exercised, bleeding may be had recourse to. A blister may be applied to the groin, and repeated if necessary. Blisters applied to the knee, or the thigh, though there is no actual disease in these parts, will often occasion considerable, or even entire, relief of the pain, which is referred to these parts in consequence of their sympathy with the hip. This is a curious circumstance; but I have known it happen in so many instances, that, however difficult it may be to explain it, I can entertain no doubt of the fact. Sometimes the pain is altogether relieved by the application of the blister; at other times I have known it leave the knee to which the blister was applied, and attack the hip.

The objections which may be urged against the application of caustic to the skin of the groin do not hold good with respect to a seton in this situation. I was led to adopt this treatment some years ago, partly from observing that the skin of the groin is nearer to the hip-joint than the skin elsewhere; partly from an expectation (though not a very confident one,) that the making a seton over the trunk of the anterior crural nerve might be particularly calculated to relieve the pain referred to those parts, to which the branches of that nerve are distributed. The results of this practice more than realized whatever hopes I had entertained of its success. In many cases the seton occasioned very speedily a complete relief of the pain. In other cases, indeed, it failed in producing the like good effects; but these cases have born only a small proportion to those in which it has succeeded. On the whole, I am led to conclude, that where the pain is very severe, the seton in the groin is more calculated to afford immediate relief than the caustic issue; but that is not so efficacious in checking the progress of the disease, as it is in lessening the violence of its symptoms; and that the caustic issue can be better depended on for the production of a cure.\*

\* "The following are extracted from notes, which were taken formerly, when I was making observations on this subject. I will not undertake to say, that in every one of these cases, the disease is precisely that which is now under our consideration. Probably, in some of them, it was that scrofulous affection which will be described hereafter; but they equally serve to illustrate the effects of the seton in the groin, when the patient is exhausted by pain in consequence of disease in the hip.

"November, 1808.

"Martha Atkinson, fifteen years of age, laboured under symptoms of ulceration of the cartilages of the hip. She had pain in the hip and knee, but that in the hip was the more severe of the two. Her sufferings were such, that she could not venture to make the slightest alteration in her position; and she could scarcely procure any rest at night.

"November 20, a seton was made in the groin.

"November 22, the pain in the hip is almost completely relieved; and from this time she mended rapidly.



To make the seton in the groin, it is convenient to use a curved seton-needle. In the majority of cases, the patient keeps the thigh considerably bent on the pelvis; and this position of the limb makes it difficult to employ a needle of the usual form. The seton may be introduced obliquely on the anterior part of the joint, including from one inch and a half to two inches of the integuments. After some time the skin over it usually inflames and ulcerates, and the seton drops out; but this does not happen before it has produced all the benefit which may be expected from it.

Of the above observations on the ulceration of the cartilages of the hip, many are applicable to the disease in other joints.

In all cases it is indispensable that the parts affected should be kept in a state of the most complete repose, and this is to be accomplished by various means, accordingly as one or another joint is the seat of the disease. In some instances, when the disease is in the knee, or ankle, or tarsal joints, nothing can be done better in the first instance than simply to lay the joint on an air pillow, which, if not much distended with air, gives a uniform, regular, and most convenient support on every side; but, for the most part, it is better to have recourse to splints made of pasteboard, or stiff leather, neatly moulded to the figure of the limb. When the disease is in the shoulder, the fore arm should be supported by a light leathern boat, suspended from the waist or neck, and the arm should be kept constantly bound to the side, and when it is in the ankle, great advantage will often arise from the patient wearing a common wooden leg, which will enable him to take exercise for the maintenance of his general health, without aggravating the local disease.

“ John Selly, eleven years of age, was admitted into St. George’s Hospital on the 28th of December, 1808, with severe pain in the hip and knee: tenderness in the region of the hip, and enlargement of the glands in the groin.

“ December 30, a seton was made in the groin.

“ The pains in the hip and knee were almost completely relieved within a few hours after the seton was introduced. The relief was permanent, and on the 24th of May following he left the hospital as cured.

“ Susan Dean, about twelve years of age, was admitted into St. George’s Hospital, in November, 1808, with very severe pains in the hip and knee, in consequence of disease in the former joint. A large abscess presented itself on the upper and outer part of the thigh.

“ On the 4th of December, a seton was made in the groin. The pains were relieved on the same afternoon. She had no return of pain while she continued in the hospital, but, as her friends took her away in a few weeks after the seton was made, I had no opportunity of observing the termination of the case.

“ James Craven, a young man, was admitted an out-patient of St. George’s Hospital, on the 15th of March, 1809, with the usual symptoms of ulceration of the cartilages of the hip. There was a large abscess on the outside of the thigh, and intense pain in the knee, preventing his rest at night.

“ March 16th, a seton was made in the groin. Being unable to become an in-patient of the hospital, he walked home afterwards. Nevertheless, the pain was completely relieved in a few hours, and he slept soundly at night, the pain not at all disturbing him.

“ After this, the abscess burst, and collected again several times; and he became affected with hectic symptoms. I did not see the termination of the case, but I make no doubt of it having ended fatally.”

But whatever may be the mechanical means adopted for the purpose of preventing the motion of the diseased parts, care must be taken that they do not interfere with the use of those external, or counter-irritants, the great efficacy of which may be said to have been established by the experience and consent of surgeons of all ages and countries.

Where the knee or elbow is affected, we may employ the caustic issue or the blister kept open by means of the savine cerate, but the former appears to be the most efficacious of the two. In the knee, a narrow slough may be made by rubbing the skin with the caustic potash on each side of the patella; and, in the elbow, the caustic may be applied in the same manner on the inside, and on the outside of the joint. When I have met with this disease in the shoulder, I have sometimes employed a large blister, and kept it open by means of the savine cerate; and in other cases I have made two caustic issues, one on the anterior the other on the posterior part of the joint; and, on the whole, caustic issues have appeared to be productive of better effects than the blister. Where the disease has its seat in those joints which are surrounded by numerous tendons, as the wrist and ankle, it may be more prudent to employ the blister, lest injury should be done to the superficial tendons by the application of the caustic. I have, however, in several cases made a caustic issue below the internal or external malleolus. It has produced the best effects with respect to the disease in the ankle, but has been sometimes attended, otherwise, with unusual irritation and distress to the patient, so that it was with difficulty that he could be induced to allow it to be kept open for a sufficient length of time.

I have seen many cases in which the caustic issue has in the first instance removed all the symptoms of the disease; and yet, after some time, notwithstanding that the patient has remained in a state of perfect quietude, and there has been no evident cause of aggravation, they have returned nearly in the same form as before, and with their original severity. In some of these cases, their recurrence is to be attributed to the issue itself; which, from some cause, that the present state of our knowledge does not enable us to explain, produces an effect, apparently the opposite to that which it produced when it was first made. The issue being allowed to heal, the symptoms again subside, and perhaps the patient may find himself entirely and permanently relieved before the sore is completely cicatrised. The same thing may be observed, perhaps more frequently, where a blister has been long kept open by means of the savine cerate; and here, if the blister be of a large size, the recurrence of the pain is usually attended with a quick pulse, and a furred tongue, and much constitutional irritation; of all which the patient is relieved, when the blistered surface is allowed to skin over. It is evident that it is of much importance, and also that it may require considerable discrimination on the part of the surgeon, to distinguish when the issue or the blister begins to be injurious, and ought therefore to be persevered in no longer.

In other instances, where the symptoms have returned under the



use of the caustic issue, it has appeared to me that this was to be explained in a different manner. A very small quantity of matter has been formed by the ulcerated surfaces of the joint, but not sufficient to prevent the application of the caustic from producing in the first instance very considerable benefit. But having once begun, the suppuration has continued, until a sufficient quantity of pus had been collected to occasion distention of the joint, and the reproduction of the former symptoms, in spite of the remedy which before relieved them. Such cases are not of very unfrequent occurrence, and they show that the surgeon should not incautiously give a very favourable prognosis in the first instance, because the immediate effects of the issue have been beneficial; but that he should wait and observe whether these good effects continue, before he ventures positively to predict his patient's recovery.

The treatment of the abscess which arises from this disease in a joint, makes a question of very serious importance, but more so as it regards children, than adults; since the former may, and do frequently, recover, even after an extensive suppuration has taken place; whereas the recovery of an adult person from an abscess arising out of ulceration of any of the textures belonging to a joint is a comparatively rare occurrence.

I have not found that the method of evacuating the matter, which has been recommended by Mr. Abernethy, in his treatise on the lumbar abscess, is attended with any particular advantage in a case of carious joint. Indeed this corresponds with what a little consideration might lead us to expect. If an abscess takes place as a primary affection, the disease being confined to the soft parts, there may be nothing to prevent the contraction of the cyst, and the gradual diminution of pus evacuated at each puncture. But where an abscess occurs, in consequence of an ulcerated state of the articular cartilages and bones, as the cause of the abscess exists equally after, as before the puncture, the suppuration will necessarily be kept up, and the contraction of the cyst, and the obliteration of its cavity will be prevented.

In some instances I have been led to believe, that, after the application of the caustic, the tumour formed by the abscess has diminished in size; as if from an absorption of a portion of its contents. I have, however, seen no instance of complete absorption having taken place under this treatment, nor have I been more successful in my attempts to procure the absorption of an abscess by other means. Emetics, whether they were given to excite vomiting, or only in nauseating doses, were, in my experiments, of no service. Electricity was never useful; appearing rather to occasion a more rapid accumulation of matter. It being supposed, that pressure, under certain circumstances, causes an increased action of the absorbent vessels, in two cases I applied stripes of adhesive plaster round the limb, with the view of trying the effects of pressure on the contents of the

abscess. The consequence was, a speedy diminution of the external tumour; but I afterwards found that this arose, not from any absorption having taken place, but simply from the increased resistance on the surface causing the abscess to occupy a larger space in the interior of the limb. Yet I do not feel myself justified in asserting, that there is no such thing as the spontaneous cure of an abscess by absorption. I have certainly seen several instances of tumours, having all the external characters of abscess, which, in the course of a few months, and sometimes in a much shorter space of time, have wholly disappeared. The question, however, will always remain, whether such a tumour was really an abscess, or simply a collection of serum. A young woman was admitted into St. George's Hospital, having a tumour containing fluid, tender to the touch, and with the skin over it inflamed, on the anterior part of the pectoral muscle, near the axilla. Not doubting that it was an abscess, I punctured it with a lancet, and a considerable quantity, not of pus, but of pure serum, escaped. Some time afterwards a similar tumour presented itself in the neighbourhood of the former one, which I did not puncture, and this disappeared spontaneously, without discharging its contents. If I had not punctured the first tumour, I might probably have regarded each of them as affording an example of an abscess having been removed by absorption.

The early puncture of an abscess connected with a diseased joint is certainly not to be recommended. I have always observed that such an abscess has healed more readily, and that the opening of it, (whether by a natural process, or by the lancet) has been attended with fewer ill consequences, where the patient has been kept for some time in a state of perfect quietude, and the other methods of treatment, formerly mentioned, have been previously resorted to, than where it has taken place immediately on the patient coming under the care of the surgeon. Nor is this difficult to explain: in the latter case, at the bottom of the abscess there is a carious or ulcerated surface of bone; in the former, it is highly probable that the process of cure has already begun, and that where there was diseased bone before, there is now a granulating surface. At any rate it cannot be supposed, that when, in consequence of the neglect of the disease, the ulcerated bones, as well as the other parts, are in a state of inflammation, the abscess can be under such favourable circumstances for being opened, as when such inflammation has been previously allowed to subside, under rest, and the employment of proper remedies.

An abscess connected with any joint, but particularly one connected with the hip, does not form a regular cavity, but usually makes numerous and circuitous sinuses in the interstices of the muscles, tendons, and fasciæ, before it presents itself under the integuments. It is therefore less easy to evacuate its contents, than those of an ordinary lumbar abscess; and indeed it can seldom be emptied, without handling and compressing the limb, in order to press the matter out of the sinuses, in which it lodges. But this is often attended with very ill consequences. Inflammation takes place of the cyst of the abscess,



and pus is again very rapidly accumulated. Small blood-vessels give way on its inner surface, the bloody discharge of which, mixed with the newly-secreted pus, goes into putrefaction, and exceedingly disturbs the general system. I have seen cases, where, after a great deal of pains having been taken to obtain the complete evacuation of the contents of the abscess, and the puncture having healed, in a few days, the tumour has become as large as ever, attended with pain in the limb and a fever resembling typhus in its character, and threatening the life of the patient. A second puncture having been made, a quantity of putrid fetid pus, of a reddish brown colour, has escaped; the confinement of which had produced all the bad symptoms, which have been immediately relieved by its evacuation.

The practice, which has appeared to me to be, on the whole, the best, is the following. An opening having been made with an abscess lancet, the limb may be wrapt up in a flannel wrung out of hot water, and this may be continued as long as the matter continues to flow of itself. In some instances, after a short time, the discharge ceases; the orifice heals, and the puncture may then be repeated some time afterwards; but where the puncture has not become closed, I have never found any ill consequences to arise from its remaining open. On the contrary, I have no doubt that it is desirable that the wound should not heal until the abscess has contracted, granulated, and healed from the bottom; and this is one reason for making, not a small puncture, but a free opening with an abscess lancet or double-edged scalpel. Another reason for proceeding in this manner is that, where the puncture is small, the abscess cannot discharge the whole of its contents. Wherever this happens, the suppuration is much greater than it would have been if the matter could have flowed out as fast as it was secreted. A profuse discharge from an abscess is an almost certain indication that there is a lodgment of matter in some part of its cavity. Such a lodgment produces an effect on the secreting surface of an abscess, similar to that which a pea produces in an issue, and it should, if possible, be prevented.

I have already observed that the prognosis, which the surgeon is led to form, must depend very much on the circumstance of suppuration having, or not having, taken place. The formation of even the smallest quantity of pus in the joint, in cases of this disease, very much diminishes in the young person, and still more in the adult, the chance of ultimate recovery. On the other hand, where abscess has not begun to form, there is perhaps no disease, among those which come under the care of the surgeon, in which he can employ his art with a better prospect of success than this. It is to be observed, however, that the symptoms may be relieved, while there are still some remains of the disease: or, at any rate, while there is still a disposition to relapse; and in order that the cure should be permanent, it is necessary that the treatment should be employed for some time after the patient is apparently recovered. A gentleman who had long laboured under ulceration of the cartilages of the hip, finding himself to be free from all uneasiness, allowed the issue to be healed. This was attended with no immediate ill consequences; but in the course of

two or three months he began to experience the well-known symptoms of his former complaint. A caustic issue was again made, and he was again relieved. The issue was kept open for twelve months longer, and then healed. When I last saw him, two or three years after the healing of the issue, he continued perfectly well. This, however, is only one of many cases, which might be quoted in proof of the above observation.

---

When the ulceration of the cartilages has made very considerable progress, if the patient recovers, so as to preserve the limb, he seldom has the use of the joint afterwards, the bones composing it being united by ankylosis; but if it has been checked in a less advanced stage, even though there may be reason to believe that the cartilages have been extensively destroyed, the patient may retain the natural motion of the joint. Cases will be found in other parts of this volume, in which the bony surfaces of a joint were covered by a dense membrane, formed to supply the place of the cartilage which had been destroyed; and I cannot assert that this membrane is never ultimately converted into the true cartilaginous structure. In other instances a compact layer of bone is generated on the carious surface, nearly similar to what is seen in the healthy bone, after the cartilage has been destroyed by maceration. I have many times, in dissection, observed a portion of the cartilage of a joint wanting, and in its place, a thin layer of hard, semi-transparent substance, of a grey colour, and presenting an irregular granulated surface. It is probable that in these cases also the original disease had been ulceration of the cartilages. In a subject in the dissecting room, I found no remains of cartilage on the bones of one hip; but, in its place, a crust of bony matter, of compact texture, of a white colour, smooth, and having an appearance not very unlike that of polished marble. Of course, in this instance I could learn nothing of the history of the disease: but I suspected that it had been **originally one** of ulceration of the articular cartilage, and this opinion seemed to derive confirmation from the following case, which occurred afterwards.

#### CASE XLI.

A woman, thirty-six years of age, was admitted into St. George's Hospital, with pain in the hip and knee on one side. The nates were wasted and flattened, and a large abscess had burst, leaving a sinus communicating with the hip-joint. She was affected with hectic fever, and gradually sunk and died.

On inspecting the body, various sinuses were found in the neighbourhood of the hip, and communicating with it.

The synovial membrane and capsular ligament had undergone no alteration in their appearance, beyond what evidently depended on the abscess. The cartilage was every where absorbed from the articulating surfaces, and in its place there was a white polished surface, similar to that which has been just described.



## SECTION IV.

## CASES OF THIS DISEASE.

THE following cases, which are taken from many similar, of which I have preserved notes, are intended to illustrate the observations contained in the last two sections. There seems to be no doubt that the disease was ulceration of the articular cartilages, since the symptoms exactly corresponded with those which have been observed in cases of this description, in which an opportunity occurred of examining the morbid appearances after death, or after amputation. It will be observed, that I have not selected cases in which the disease was situated in the hip; nor those in which it had reached its most advanced stages; my reasons for which have been, that a sufficient number of examples of this affection of the hip, may be found among the cases already published by Mr Ford, and other writers; and that it is in its early stage that the disease principally deserves to be studied, and that the diagnosis is of the most importance.

## CASE XLII.

Mary Jenkins, twenty-one years of age, in May, 1809, received a blow on one of her knees. Soon afterwards, she was seized with pain in the joint, which gradually became more severe. In September of the same year, she was admitted into St. George's Hospital on account of this, and of some other complaints, which required medical treatment. At first she was under the care of Dr. Bancroft. On the 9th of November, she came under the care of the surgeons. At this time, the knee was somewhat swollen; the swelling having the form of the articulating ends of the bones, and appearing greater than it really was, on account of the wasting of the muscles of the limb. No fluid was perceptible in the joint. She complained of violent pain, which she referred chiefly to the inside of the head of the tibia, and which was extremely aggravated by motion. There was no redness of the skin. She was emaciated, and laboured under a slight degree of hectic fever.

An issue was made with caustic on each side of the ligament of the patella. The issues were kept open by means of peas; their surfaces being also rubbed with caustic every fourth day.

At the expiration of a fortnight the pain was very much abated; she was able to give some motion to the joint without much uneasiness. The swelling had nearly disappeared.

In a short time the pain was completely relieved; however, she did

not quit the hospital until the September of the following year. At this time she was free from all bad symptoms, and had recovered the perfect use of the joint.

### CASE XLIII.

John Reade, twenty-eight years of age, applied for relief as an out-patient, of St. George's Hospital, on the 4th of October, 1811.

He said, that for the two preceding years, he had been subject to pains in the elbow, which were occasionally severe, but attended with little or no swelling. At the time of his coming to the hospital, the pain in the joint was very violent, particularly at night, when it continually roused him from his sleep. There was also pain in the shoulder and wrist; but trifling, when compared to that in the elbow, and only occasional. The elbow was slightly swollen, the swelling having the form of the articulating ends of the bones, and arising, not from fluid within the joint, but from inflammation having extended to the cellular membrane external to it. The fore-arm was kept bent, and all attempts to move it from this position caused a severe aggravation of the symptoms. There was some degree of symptomatic fever.

Eight ounces of blood were taken from the other arm, which occasioned some, but not considerable relief.

October 8th. A caustic issue was made on each side of the joint.

October 11th. He was free from the symptomatic fever; the pain in the shoulder and wrist had entirely left him; that in the elbow was much diminished.

October 16th. The sloughs were separated. The issues were afterwards kept open by the occasional application of caustic. He now made very little complaint of pain, and slept well at night. From this time he experienced very little uneasiness. He gradually recovered the use of the elbow; and, in a few weeks, finding no inconvenience from the complaint, he ceased to attend at the hospital.

### CASE XLIV.

A lady, thirty-three years of age, in November, 1816, first experienced a pain in the articulation of the lower jaw, on the left side; and this was attended with a sense of stiffness, and difficulty of taking and masticating food. Some liniments were used, which seemed rather to aggravate the complaint, and were therefore left off. From this time the symptoms gradually and slowly increased; and, in May, 1818, when I was consulted, they were as follows:—There was severe pain in every motion of the lower jaw, especially in masticating the food and yawning. The pain was induced whenever pressure was made in the situation of the articulation of the lower jaw with the left temporal bone; but there was no tenderness in any other situation. From this joint, however, as from a center, the pain extending in various directions; to the temple; to the back of the head, towards the lambdoidal



suture; to the lower part of the orbit of the left eye, and even down the left arm. She said that it was impossible to describe the character of the pain, as she had experienced nothing like it before. When the fingers were applied to the joint, and the lower jaw was at the same time opened and shut, a grating sensation was communicated to them, as if the articulating surfaces were deprived of their cartilages. There was no evident tumefaction. The patient did not complain of her sleep being much disturbed; nor did her general health appear to be considerably affected, though her pulse was as frequent as 96 in a minute.

The caustic potash was applied so as to make a slough of the skin below the ear, opposite the condyle of the lower jaw, on the anterior edge of the sterno-cleido-mastoideus muscle. She now returned into the country, where she was under the care of Mr. Pitman, of Andover, who removed the slough made by the caustic, and kept open the issue in the usual manner.

After the issue had been established for five or six months, and not before, there was considerable relief from pain. On the 21st of August, 1822, Mr. Wm. Pitman wrote me the following account of our patient:—"At this time she has the perfect motion of the jaw, but there is still the same grating sensation when it is moved, as there was formerly, though in a less degree. She has the power of masticating almost all articles of diet, which are not very hard. The condyle does not appear to be much reduced in size; when, however, the mouth is widely opened, as in yawning, our patient generally places her hand to support the jaw, as if fearful that it might slip out of its situation. With all this amendment, however, there is considerable pain occasionally; and as there has never been an absolute cessation of pain for more than three or four weeks at a time, the issue is still kept open."

#### CASE XLV.

A gentleman, twenty-four years of age, about the end of the year 1816, became affected with a slight pain in the left ankle; and he observed also that this pain was particularly aggravated, whenever anything occurred to press the articulating surfaces of the joint against each other; for example, when he happened to tread with his heel on any projecting stone in the street. He also observed a very slight degree of puffy swelling on the anterior and outer part of the joint, before the external malleolus.

On the 6th of January, 1817, he went to a ball, and danced; and on the following day the pain was very much aggravated. The exercise also brought on some degree of general tumefaction about the joint; which, however, subsided with the rest, in the course of twenty-four hours. But the pain continued and increased; so that he could not support the weight of his body on that foot, and he was compelled to walk with the assistance of one, and afterwards of two,

sticks. In May following a general puffy swelling took place around the whole joint, which did not subside.

On the 30th of June, 1817, he consulted me, being then in the following condition:—

There was some degree of general œdematous tumefaction of the whole joint, in consequence of slight inflammation of the cellular membrane external to it. There was a constant and severe pain referred to the ankle, which was rendered more violent, when he attempted to stand, and when the cartilaginous surfaces were pressed against each other, by the hand placed on the lower part of the heel. His rest was disturbed at night, by painful startings of the limb.

He had come to consult me at my own house; and in going home, he fell from his horse, and wrenched his ankle, which brought on inflammation, and rendered all the symptoms still more severe.

He was directed to remain at home in a state of perfect quietude, and never to place the foot on the ground. Leeches and cold lotions were applied, and the application of the leeches was repeated. Under this treatment the additional inflammation induced by the accident subsided; and the pain became much less severe. At the end of August, a blister was applied on each side of the ankle, and kept open by means of the savine cerate. After the first blisters were healed, others were applied, and kept open in the same manner; and in the intervals between the applications of the blisters the joint was bound up in stripes of linen spread with soap plaster.

About the end of September he was so much relieved that (having some concerns which it was of much importance to himself to attend to,) he was allowed to go out occasionally in a chaise.

On the 20th of December, a caustic issue was made behind the inner ankle. This occasioned exceeding irritation and uneasiness, and the issue was in consequence allowed to begin to heal, about a fortnight after the separation of the slough. He was, however, much benefited by the issue; and after it was healed, he was free from pain, and the swelling had subsided.

On the 23d of May, 1818, he was in the following condition: He was free from all pain; could bear the joint to be moved, and could support the weight of the body on that foot without inconvenience. There was still some slight remains of the external swelling. When the joint was moved, a grating sound could be heard; and if at this time the fingers were applied to the joint, a sensation was communicated to them, as if two hard and rough surfaces were rubbed one against the other.

#### CASE XLVI.

Mary Taylor, fifty years of age, was admitted into St. George's Hospital, on the 3d of December, 1809.

She said that in the preceding July she experienced a violent wrench of the right shoulder, in consequence of her husband having



pulled her by the arm. Soon afterwards she was attacked by pain in this joint, which gradually became very severe. At the time of her admission into the hospital, there was no alteration in the external appearance of the shoulder. There was not the smallest evident swelling; but she complained of constant and violent pain, which was much aggravated by every attempt to move the arm. The pain was most severe at night so as very much to disturb her rest. She was unable to lie on the side on which the disease was situated.

The arm was supported by a sling, and a blister was applied to the shoulder, and afterwards kept open by means of the savine cerate.

In less than a fortnight the symptoms were much relieved. In the beginning of January, 1810, she had very little pain, and slept well at night. About the middle of February she was dismissed from the hospital, being free from all her former symptoms. She was directed to attend as an out-patient, that the blister might be kept open for some time longer; however, she never made her appearance at the hospital again, probably in consequence of her finding no inconvenience from the complaint, and of her not being convinced of the necessity of continuing the treatment after the symptoms were relieved.

---

The following case is of considerable interest, inasmuch as it exhibits the disease in its acute form, attended with more urgent symptoms than those which usually mark its existence in the beginning; and also on account of the manifest resemblance which it bears to the case of Holder, in which the opportunity occurred of examining the state of the diseased parts.

#### CASE XLVII.

Sarah Hansell, forty-six years of age, was admitted into St. George's Hospital, on the 22d of August, 1822.

She laboured under pain in the left knee, and a swelling extending up the lower part of the thigh, chiefly on the anterior part. There was no effusion of fluid into the joint. The leg was bent at an acute angle with the thigh, and the patient was unable either to extend it, or bend it, or bend it farther. The pain in the knee was referred chiefly to the inside of the joint; it was very severe, especially at night, when it awoke her from sleep with startings of the limb. Every attempt to press the articulating surfaces of the joint against each other was productive of acute suffering, causing the patient to scream; and she could not even bear the weight of the bed-clothes on the limb. There was much symptomatic fever, with a countenance expressive of severe suffering. The tongue was white and dry, and the pulse small and frequent.

Eleven weeks previous to her admission, she had become affected with rheumatic pains in her wrists and ankles. In the course of a few days these pains subsided, but she was now suddenly seized with

most severe pains in the left knee, accompanied by much fever. After two or three days more, the joint appeared to be swollen, first on the inside, then in front on each side of the ligament of the patella. The swelling attained a considerable size, but gradually diminished on the abstraction of blood by leeches and cupping. The pain, however, became progressively more severe.

She had been always subject to rheumatism; independently of which her health was good. The catemenia had ceased since the beginning of the attack.

August 24. She was directed to take two grains of calomel and half a grain of opium, in a pill, three times daily. Leeches were applied to the knee, and afterwards a blister.

August 30. The gums were affected by the mercury. The pain in the knee was much abated, and she slept better at night. General health much improved. She was directed to take a pill only twice daily.

September 8. The pain and swelling of the knee were much farther diminished. The gums continued sore. A blister was applied to the lower part of the thigh.

September 12. The mercurial pills were discontinued. Ten grains of the *pulvis ipecacuanhæ compositus* were ordered to be given every night, and an issue was made with caustic; one above and the other below the knee joint. The application of the caustic gave much immediate relief.

September 22. The pain was trifling, except when the joint was moved; and there were still some painful startings of the limb at night. The swelling was reduced, so that the joint had become of its natural size and figure. Her general health was much improved.

October 6. The symptoms were still farther relieved, and the leg was gradually becoming more extended. The issues were kept open by the occasional application of the caustic potash. From this time her amendment was progressive. On the 8th of May, 1833, she quitted the hospital, the knee being ankylosed in the bent position. She still experienced slight pain occasionally in it.

---

I have before observed, that ulceration of the articular cartilages is not unfrequently complicated with inflammation of the synovial membrane. Sometimes the one, and sometimes the other is the original disease; in like manner as we find ulcer of the cornea of the eye, in some cases the cause, and in others the consequence, of inflammation of the tunica conjunctiva. In the very advanced stage, when the organization of the joint is completely destroyed, this complication must always exist; and it is unnecessary to adduce evidence of this fact. But occasionally the two diseases are combined together in a more early stage, and previous to the establishment of suppuration.

The two following cases will serve to illustrate these observations. In one of them the ulceration of the cartilages appears to have been the primary, and inflammation of the synovial membrane the second-



ry, affection: at least the symptoms which occurred seem to be better explicable on this supposition than on any other. In the second case, the early symptoms indicated the existence of inflammation of the synovial membrane, and it was not until after these had subsided that there were any signs of ulceration of the cartilages.

## CASE XLVIII.

John Child, thirty-three years of age, in April, 1814, was seized with a pain in one knee. The pain at first was slight, but gradually became very severe. It was referred principally to the head of the tibia on each side of the ligament of the patella. At the end of five months, the joint for the first time became swollen, and the swelling soon attained a considerable size. He was now under the necessity of confining himself to his room. Five blisters were applied in succession, and the swelling and pain subsided; so that at the end of three weeks he returned to his usual occupations. In five or six days, however, the pain and the swelling returned, and he was in consequence admitted into St. George's Hospital on the 26th of October.

At this time he complained of pain in the joint, referred to the head of the tibia, on each side of the ligament of the patella. The pain was excruciating, so as often to keep him awake during the whole night. The knee was much swollen; the swelling arising from an effusion of fluid into its cavity, and having the same form as in ordinary cases of inflammation of the synovial membrane.

October 29. A blister was applied including the greater part of the circumference of the joint.

November 7. The swelling and pain were relieved. Another blister was applied, which was kept open with the savine cerate until the end of the month. It was then healed, and a third blister was applied and kept open in the same manner.

On the 21st of December, he left the hospital of his own accord. The pain at this time was very nearly, but not completely, relieved: the knee was swollen only in a very slight degree; and the trifling swelling which remained appeared to arise, not from fluid within the articulation, but from thickening of the soft parts in consequence of their having been previously inflamed.

## CASE XLIX.

Anne Donegan, twenty-seven years of age, was admitted into St. George's Hospital in May, 1817, labouring under a disease of one knee.

The leg was bent at a right angle with the thigh, and the patient was incapable of altering its position. There was no effusion of fluid into the cavity of the joint, but there was a slight degree of swelling, apparently in consequence of an effusion of fluid into the cellular texture external to it. The joint was painful and tender to the touch.

From the history of the case, it appeared that the disease had originated in an attack of inflammation of the synovial membrane, which had subsided and left the present symptoms.

Leeches were applied to the knee, and the limb was kept in a state of repose. In the beginning of June, there was a severe aggravation of the pain in the knee, and the leg became more bent, so as to make an acute angle with the thigh.

June 7. A blister was applied to the thigh immediately above the knee, and an opiate was directed to be taken at bed-time.

The pain was at first relieved by the application of the blister; but, on the 12th of June, it became again as severe as ever.

Another blister was applied on the inside of the knee, and directed to be kept open with the savine cerate.

June 18. The pain in the knee was excruciating: the leg continued bent at an acute angle with the thigh. The blister being healed, an issue was made with caustic on the inside of the joint.

The pain was much relieved immediately after the application of the caustic.

July 8. The pain in the knee, which had become much abated, being again severe, another issue was made with caustic over the outer condyle of the femur.

From this time the pain was entirely relieved. The issues were kept open.

October 6. The patient continued free from pain, and she could move the limb much more freely than before.

December 16. The motion of the joint was still very limited: but there was no pain, except when the leg was moved, so as to extend the adhesions which appeared to have been formed in the joint. She left the hospital.



## CHAPTER V.

ON A SCROFULOUS DISEASE OF THE JOINTS HAVING ITS  
ORIGIN IN THE CANCELLOUS STRUCTURE OF THE BONES.

---

## SECTION I.

## PATHOLOGICAL OBSERVATIONS.

THE term scrofula is often employed without much precision; and indeed, it is not always easy to determine what symptoms ought, and what ought not, to be referred to this disease. It has been usual to regard nearly all the affections of the joints as scrofulous; and I believe it may be found that persons having a predisposition to scrofula, are, on the whole, more liable than others to those affections, which form the subject of the preceding chapters. As, however, they occur very frequently where no such predisposition exists, there seem to be no sufficient grounds for considering them as having any necessary connexion with it; and it can be no more proper to designate these as scrofulous, than it would be to denominate inflammation of the synovial membrane a mercurial disease, because it occasionally arises from the use of mercury. But there is another malady, which affects the joints, having all the characters of scrofula: generally occurring in persons who have a scrofulous appearance, and usually preceded by, or combined with, other scrofulous symptoms.

In this disease of the joints, the cancellous structure of the bones is the part primarily affected; in consequence of which, ulceration takes place in the cartilages covering their articulating surfaces. The cartilages being ulcerated, the subsequent progress of the disease is in many respects the same as where the ulceration takes place in the first instance.

## CASE L.

Thomas Scales, aged eighteen, having a scrofulous appearance, was admitted into St. George's Hospital on the 18th of October, 1815.

He complained of pain, which he referred to the inside of one foot. The pain was constant, but slight, and not sufficient to prevent his walking as usual. There was very little, if any, tumefaction, and the parts were not tender to the touch. He was also in a general ill state of health: there were symptoms of derangement of the functions of the liver, and the urine was turbid, depositing a quantity of sediment, which stained the vessel that contained it of a pink colour. He was heavy and stupid, and scarcely able to give any consistent account of his ailments. There were some small ulcerations at the edges of his eyelids.

While he was under a course of remedies for these complaints, he was seized, in the beginning of February, 1816, with a continued fever, of which he died on the 1st of March.

On dissection, the foot, which had been the seat of the pain, was particularly examined. The bones of the tarsus, and metatarsus, were found to contain an unusually small quantity of earthy matter; so that they were preternaturally soft, and admitted of being cut in any direction with a scalpel, without turning its edge. The cut surfaces of these bones were of a deep red colour, in consequence of increased vascularity; and vessels injected with their own blood could be distinctly traced extending from the bones into the cartilages covering them, and rendering the latter, in a few spots, of a red colour. The cartilage covering the internal cuneiform bone where it forms the joint with the metatarsal bone of the great toe, was ulcerated to a small extent. The ulceration had begun on that side of the cartilage which was connected to the bone; the surface towards the joint remaining entire. The bones of the tarsus were more diseased than those of the metatarsus; and those on the inside of the tarsus were affected in a greater degree than those on the outside. The bones of the other foot were affected in the same manner, but in a much less degree. Some of the other bones were examined, and were found nearly in a natural condition.

#### CASE LI.

December 21st, 1814. In a boy apparently about ten years of age, whose body I had the opportunity of examining after death, I observed the following appearances:—

Both elbows were slightly swollen. On the fore-part of the right arm, immediately above the elbow, there was the orifice of a sinus, which extended downwards obliquely into the cancellous structure of the bone, where it terminated, without communicating with the cavity of the joint. The cancellous structure of the articulating extremities of the os brachii, radius, and ulna, was so soft, that it might be crushed by a very slight degree of force when squeezed between the fingers: it was of a dark red colour, preternaturally vascular; and there was a reddish fluid, mixed with medulla in the cancelli. The cartilages covering the radius and ulna were in a natural state; that be-



longing to the os brachii was ulcerated in a few spots on the surface towards the bone, while the surface towards the cavity of the joint was entire. There were no morbid appearances of the ligaments or synovial membrane.

The bones of the left elbow were in a similar state of disease; the cartilages were entirely destroyed by ulceration; and carious surfaces of bone were exposed. A small portion of dead bone had exfoliated into the cavity of the joint, where it lay surrounded by matter. The synovial membrane and ligaments were extensively destroyed, and there were several sinuses communicating with the joint and opening externally.

On examining the right knee, which externally had not the slightest marks of disease, and admitted of perfect motion, the cancellous structure of all the bones which enter into its composition was found in the same morbid condition with that of the bones of the elbows, being preternaturally red and vascular, with a much less proportion than is usual of earthy matter, so that they admitted of being crushed by a very slight force. In the interior of the lower extremity of the femur, between the two condyles, there was one part where the earthy matter seemed to have entirely disappeared, and there was in consequence an irregular space, in which there was little else than medulla and a reddish fluid mixed together: near this part, the cartilage had only a very slight adhesion to the bone, and ulceration had begun on its inner surface.

In several other joints which were examined, there were marks of the same disease, but in a less advanced stage.

## CASE LII.

John King, twenty-six years of age, having blue eyes, thick lips, and a florid complexion, was admitted into St. George's Hospital on the 1st of June, 1811, on account of a complaint in his right ankle and foot. I received the following account of his case, partly from himself, and partly from a medical gentleman, who was in the habit of seeing him before he came into the hospital.

About the end of May, 1810, he wrenched his foot. The instep and ankle became swollen and painful, but in a few days these symptoms subsided. During the summer he experienced slight pain and weakness of these parts, whenever he took more than his usual quantity of exercise. In October a slight tumefaction was observed on each side of the ankle, and the pain was more severe, but still not sufficient to prevent his going about his usual occupations. About the middle of December the pain became more violent, and he was confined to the house for a fortnight; after which the pain abated, so that he was able to go about with the assistance of a crutch.

In March, 1811, an abscess burst on the outside of the foot. The formation of an abscess was not attended with any considerable degree of pain.

He formerly had been supposed to labour under incipient *phthisis pulmonalis*; but from the time of the disease having begun in his foot, he suffered no inconvenience from the complaint in his lungs.

At the time of his admission into the hospital, there was a diffused œdematous swelling of the soft parts over the whole foot and ankle. On the outside there were the orifices of three or four sinuses, which had burst at different periods. He had very little pain even on motion or pressure. Soon after his admission, another abscess broke on the inside of the heel.

On the 11th of July the leg was amputated.

On examining the foot, the cells of the cellular membrane were found distended with serum and coagulated lymph.

All the bones had undergone a morbid change, similar to what was observed in the last case, except that they were still soft and more vascular.

The cartilages of the ankle were completely destroyed by ulceration, and the exposed surfaces of bone were in a state of caries. The cartilages of the tarsus were entire, but in some places, of a red colour; and this was found to arise from vessels loaded with red blood, extending into them from the bone. The ligaments and synovial membranes of the tarsal joints were in a natural state, as were also those of the ankle, except where they had been destroyed by the abscesses.

### CASE LIII.

This patient was a soldier in the Coldstream Guards. I once had an opportunity of seeing him before amputation was performed; and, through the kindness of the medical officers of the regiment, I was favoured with the previous history of the complaint, and with the opportunity of examining the amputated joint.

William Miles, twenty years of age, of a delicate complexion, with red hair and dilated pupils, was attacked with a slight pain and swelling of the left knee, about the middle of January, 1808. On keeping quiet for a few days, the swelling subsided; but it returned about the end of March, though still attended with very little pain.

He was received into the hospital of the battalion, at Chatham; and, on the 9th of June following, he was sent to the regimental hospital in London.

At this time the diseased knee measured in circumference three inches more than the other. Fluid was felt external to the joint, and in the cavity of the joint itself. The leg was kept extended, and all attempts to bend it gave considerable pain; but otherwise, the pain which he endured was trifling, amounting only to a slight degree of uneasiness, deep-seated in the joint. On the 8th of July, an abscess burst near the inner edge of the patella, and discharged about eight ounces of thin pus. On the 27th of July, the limb was amputated.

On examining the knee, the articulating extremities of the tibia and



fibula were found so soft, that they were readily cut by a common knife: they contained much less earthy matter than is usual, and their cancelli were filled by a yellow cheesy substance.

The cartilage covering the head of the tibia was destroyed by ulceration in a few spots at the margin. That of the femur was eroded for a very small extent behind the crucial ligaments. The patella, and the cartilage covering it, were in a natural state. Coagulated lymph, having a gelatinous appearance, had been effused into the cellular texture, on the outside of the synovial membrane. Pus was found external to the joint, and in the joint itself.

#### CASE LIV.

Charles Miller, twenty years of age, having blue eyes, light hair, and a fair complexion, was admitted into St. George's Hospital, in April, 1808, on account of a disease of one foot.

The whole foot was swollen and œdematous, with two fistulous sinuses, one on the inside, and the other on the outside, through which a small quantity of scrofulous matter was discharged. A probe having been introduced into either of the sinuses, some exposed pieces of bone might be distinguished.

On the 16th of May, the limb was amputated below the knee.

On examining the amputated foot the muscles were found pale and wasted from want of use, and the cellular membrane was distended with coagulated lymph.

The extremities of the tibia and fibula, all the bones of the tarsus, and the extremities of the bones of the metatarsus, contained much less earthy matter than is usual. They were so soft, that they might be cut with a scalpel without the edge of it being turned. They were preternaturally red and vascular, and a yellow cheesy substance was deposited in the cancelli. The cartilage at the base of the fifth metatarsal bone was destroyed by ulceration. Those at the base of the three middle metatarsal bones were also destroyed, and the exposed surfaces of bone were dead, and undergoing the process of exfoliation. The cartilages of all the other bones were in a natural state. Pus and coagulated lymph had been effused in the neighbourhood of the dead and carious bones, and the sinuses communicated with them. The synovial membrane and ligaments were in a natural state except where destroyed by ulceration.

#### CASE LV.

Ellen M'Millan, eight years of age, was admitted into St. George's Hospital, on the 6th of March, 1833.

She complained of pain in the right hip, extending down the thigh, and much increased by motion, or by pressing the articulating surfaces against each other. The foot was averted. The limb was of its nat-

ural length. She had been observed to limp in walking about six weeks ago, since which the symptoms had progressively increased.

In the beginning of April, while under treatment for the disease of the hip, she became affected with other symptoms, indicating the existence of disease in the brain; under which she sank and died on the 6th of April.

On examining the body, a scrofulous tubercle was discovered in the lower part of the right hemisphere of the cerebrum, and the vessels of the brain generally were found to be turgid with blood.

In the right hip, the cartilage of the head of the femur, in the neighbourhood of the attachment of the round ligament, was found to have been destroyed by ulceration, and of the round ligament itself scarcely any vestige remained. The cartilage of the acetabulum was also ulcerated to some extent at the lower part. The bone of the pelvis, where it forms the acetabulum, and the head and neck of the femur, were of a soft consistence, so that they could be divided by a knife; and there was a considerable deposit of yellow substance in the cancellous structure of the latter.

On examining the bones of the left hip, they were found to be affected in the same manner as those of the right hip, but they were in a less advanced stage of the disease.

The cartilage of the head of the femur was detached with unusual facility from the bone below, the surface of the latter presenting a highly vascular appearance; and, in two spots, the layer of the cartilage towards the bone was destroyed by ulceration, while that towards the cavity of the joint remained entire. The space thus formed between the cartilage and the bone was occupied by a vascular substance of the consistence of granulations.

#### CASE LVI.

A girl, fifteen years of age, was admitted into St. George's Hospital, in the winter of 1809, labouring under symptoms of disease of one hip, as well as of one elbow. After remaining some months in the hospital, she left it of her own accord in the beginning of August. In the following October she was re-admitted with the disease both of the hip and elbow much advanced. There was a large abscess in the thigh; her general health was much impaired, and she sank and died in less than six weeks after her re-admission.

On dissection, the abscess in the thigh was found communicating with the cavity of the hip-joint, through an ulcerated opening of the capsular ligament and synovial membrane. The cartilages of the hip, had entirely disappeared; the bones were carious; the acetabulum had been rendered deeper and wider, and the head of the femur smaller than natural. The capsular ligament and synovial membrane were thickened, and a soft organized mass, similar to the substance of adhesions, was found adhering to the neck of the femur. The cancellous structure of the bones was softer than natural, so that it might be



cut with a scalpel, or crushed between the fingers; and the appearance of it in other respects corresponded to that of the diseased bones in the cases which have been just related.

The disease of the elbow was similar to that of the hip-joint; but it had made less progress. The ligaments and synovial membrane of the elbow were nearly in a natural state, and some thin portions of cartilage still remained on the surface of the carious bone, but having little or no adhesion to it.

---

The preceding cases sufficiently illustrate the nature and progress of this disease. The morbid affection appears to have its origin in the bones, which become preternaturally vascular, and containing a less than usual quantity of earthy matter; while, at first, a transparent fluid, and afterwards a yellow cheesy substance is deposited in their cancelli.

From the diseased bone, we see, in some instances, vessels carrying red blood extend into the cartilage. The cartilage afterwards ulcerates in spots, the ulceration beginning on that surface which is connected to the bone. The ulceration of the cartilage often proceeds very slowly. Occasionally a portion of the carious bone dies and exfoliates.

As the caries of the bone advances, inflammation takes place of the cellular membrane external to the joint. Serum, and afterwards coagulated lymph, is effused; and hence arises a puffy and elastic swelling in the early, and an œdematous swelling in the advanced stage of the disease. Abscess having formed in the joint, it makes its way by ulceration through the ligaments and synovial membrane, and afterwards bursts externally, having caused the formation of numerous and circuitous sinuses in the neighbouring soft parts.

In one of the cases which have been related, thin layers of cartilage were found lying on the ulcerated surface of bone, apparently unconnected with it. In some instances, in the advanced stage of this disease, we find nearly the whole of the cartilage forming an exfoliation instead of being ulcerated.

This scrofulous affection attacks those bones, or portion of bones, which have a spongy texture, as the extremities of the cylindrical bones, and the bones of the carpus and tarsus; and hence the joints become affected from their contiguity to the parts which are the original seat of the disease. Sometimes, however, we may trace the effects of these morbid changes even in the shaft of a cylindrical bone; so that we see the femur or tibia converted into a thin shell of earthy matter, enclosing a medullary canal of unusual magnitude.

It has been remarked by a modern author,\* that, in the last stage of this disease, the bones not only lose the preternatural vascularity which they possessed at an early period, but even become less vascular than healthy bone. I believe the observation to be correct; and this dimi-

\* Lloyd on Scrofula, p. 123.

nution of the number of vessels, and, consequently, of the supply of blood, is probably (as this author has suggested) the proximate cause of those exfoliations which sometimes occur where the disease has existed for a considerable length of time, especially in the smaller bones.

## SECTION II.

### ON THE SYMPTOMS OF THIS DISEASE.

THE scrofulous affection of the joints occurs frequently in children: it is rare after thirty years of age. Examples of it occur in almost every joint of the body; but some of them, especially the shoulder, appear to be, on the whole, less liable to it than many other articulations.\*

As it depends on a certain morbid condition of the general system, it is not surprising that we should sometimes find it affecting several joints at the same time; nor, that it should show itself in different joints in succession; attacking a second joint after it had been cured in the first, or after the first has been removed by amputation. It is seldom met with, except in persons who have the marks of what is called a scrofulous *diathesis*: and in many cases it is either preceded, attended, or followed, by some other scrofulous symptoms; such as enlargement of the scrofulous glands of the neck and mesentery, or tubercles of the lungs. I have often been led to believe, that the occurrence of this disease in a joint has suspended the progress of some other, and, perhaps, more serious, disease elsewhere.

The scrofulous disease is more likely to be confounded with that which formed the subject of the last chapter, than with any other. There is, in many respects, a correspondence in their symptoms. There are, however, certain points of difference; and I believe that this difference will be found, in general, sufficient to enable the practitioner, who is careful and minute in his observations, to make a correct diagnosis; at least in those cases in which the local disease is not so far advanced, and in which it has not so much affected the general constitution, as to make the diagnosis of little real importance.

While the disease is going on in the cancellous structure of the bones, before it has extended to the other textures, and while there is still no evident swelling, the patient experiences some degree of

\* Perhaps this arises from the circumstance of the shoulder being less exposed to the influence of the external cold, which, in most instances, promotes the development of scrofulous diseases. So we find the scrofulous enlargement of the lymphatic glands to occur more frequently in the neck than in the groin or axilla; which last are generally protected by a warmer clothing.



pain; which, however, is never so severe as to occasion serious distress, and often is so slight, and takes place so gradually, that it is scarcely noticed.

After a time (which may vary from a few weeks to several months,) the parts external to the joints begin to sympathize with those within it; and serum and coagulated lymph being effused into the cellular membrane, the joint appears swollen. The swelling is puffy and elastic, and though usually more in degree than it is at the same period in those cases in which the ulceration of the cartilages occurs as a primary disease, it is not greater in appearance, because the muscles of the limb are not equally wasted from want of exercise. I have observed that, in children, the swelling is, in the first instance, usually less diffused, and somewhat firmer to the touch, than in the adult.

If a suspicion of some disease of the joint has not existed previously, it is always awakened as soon as the swelling has taken place. Should the patient be a child, it not uncommonly happens that the swelling is the first thing, which the nurse or the parents discover. This leads to a more accurate inquiry, and the child is observed to limp in walking, if the disease be in the lower limb, and to complain of pain on certain occasions.

I have said, that the swelling was puffy and elastic; and, after what has been remarked in the former chapters, it is needless to point out more particularly the difference between it and the swelling, which takes place in cases of inflamed synovial membrane. The swelling increases, but not uniformly, and it is greater after the limb has been much exercised than when it has been allowed to remain for some time in a state of quietude.

As the cartilages continue to ulcerate, the pain becomes somewhat, but not materially, aggravated. It is not severe until abscess has formed, and the parts over the abscess have become distended and inflamed. The skin, under these circumstances, assumes a dark red or purple colour. The abscess is slow in its progress: when it bursts, or is opened, it discharges a thin pus, with portions of curdly substance floating in it. Afterwards the discharge becomes smaller in quantity, and thicker in consistence, and at last it nearly resembles the cheesy matter which is found in scrofulous absorbent glands.

In most instances, several abscesses take place in succession, but at various intervals; some of which heal, while others remain open, in the form of fistulous sinuses, at the bottom of which carious bone may be distinguished by means of a probe.

The disease not unfrequently remains in this state for several months, or even for a much longer period, without the constitution being materially disturbed by it. In the less fortunate cases, the patient at last becomes affected with a hectic fever under which he gradually sinks, unless the cause of it be removed by amputation. At other times, a curative process begins; the sinuses close; the œdema subsides; and the patient ultimately recovers, either with or without any anchylosis, accordingly as more or less destruction of the articulating surfaces has taken place. But the cure is always tedious, un-

less the disease has been arrested at a very early period. It is not uncommon to see a patient with a scrofulous joint, in a state of imperfect ankylosis, with a single sinus remaining open, and waiting for many years before even such a cure as ankylosis affords, can be said to be completed. The chance of ultimate recovery is not the same in every articulation; and I have observed that it is much less where the disease attacks the complicated joints of the carpus and tarsus, than when it is situated in those which, though of a larger size, are of a more simple structure.

The principal difference which is to be observed between the symptoms, which have been just described, and those which are met with where ulceration of the cartilages occurs as a primary affection, is in the degree of pain which the patient endures, and which is much less in cases of the former than in those of the latter description.

It may, indeed, be a matter of surprise that, in cases of this scrofulous affection, the sufferings of the patient should be so little as they are found to be, in proportion to the quantity of local mischief. For the most part, the pain which he experiences is not a subject of serious complaint, except at the time when an abscess is just presenting itself underneath the skin; and then it is immediately relieved by the abscess bursting. There is not that severe pain, which exhausts the powers and the spirits of the patient, in cases of ulceration of the cartilage, arising from other causes, except in a very few instances, and in the most advanced stage of the disease, when a portion of the ulcerated bone has died, and, having exfoliated so as to lie loose in the cavity of the joint, irritates the parts with which it is in contact, and thus becomes a source of constant torment.

There are other circumstances besides the less degree of pain, which, although not in themselves sufficient, it is useful to take into the account in forming our diagnosis; such as the general aspect and constitution of the patient, and his having manifested a disposition to other scrofulous symptoms; the very tedious progress of the disease; and the circumstance of the suppuration not being in general confined to a single collection of matter, but producing a succession of abscesses.

The progress of this disease in the hip very much resembles that of the disease which was described in the last chapter. Whatever pain exists is referred to the knee rather than to the joint actually affected. There is the same alteration in the appearance of the nates; the same apparent elongation of the limb in the early stage; and the same shortening of it at a more advanced period. Dislocation occasionally takes place in the direction upwards and outwards: in one instance only I have seen it in the direction forward, the head of the femur resting on the head of the pubes, and the knee and toes being turned outwards. The shortening of the limb, whether it be from destruction of bone, or actual dislocation, is followed, as in other cases of diseased hip, by the formation of abscesses, which present themselves in the usual situations. Yet, notwithstanding all these points of resemblance, attention to the points which have been already



noticed, and especially to the quantity of pain, which the patient has endured, will, for the most part, enable us to distinguish the real nature of the case. A girl laboured under an affection of the hip-joint, in which the nates were flattened, the limb had become shortened, and an abscess had broken on the outside of the thigh; but it was observed that she had suffered comparatively little pain. Under these circumstances she died; and when I was about to examine the body, I observed to those who were present, that there was little doubt but that the origin of the disease would be found to have been, not in the cartilages, nor in the bony surfaces to which they are connected, but in the cancellous structure of the bone. The appearances which were observed justified this remark. The cartilages were ulcerated, and the bones themselves destroyed to some extent. The latter were soft, so that they might be cut with a scalpel; and, on dividing the articulating extremity of the femur longitudinally, a considerable collection of thick pus was found in the neck of that bone, below the head, which either had not escaped at all, or had escaped in very small quantity, by oozing through the cancelli, which were interposed between it and the cavity of the hip-joint.

When the disease occurs in those joints which are more superficially situated such as the knee and ankle, we may be farther assisted in our diagnosis by observing the character of the swelling by which it is accompanied, and which is somewhat peculiar, especially in children, previously to the formation of abscess. It is then limited to the immediate vicinity of the affected part, and has a not ill-defined margin. When the disease is in the knee, the child usually keeps the leg a good deal bent, and the condyles of the femur are seen projecting, of a somewhat globular form, and appearing as if they were actually enlarged, although we know them to be not enlarged in reality. Altogether, however difficult it may be to describe it in words, the appearance is very characteristic; so that, judging from it alone, an experienced surgeon will, in many instances, be able at once to form a correct diagnosis.

---

## SECTION III.

### ON THE TREATMENT.

IN attempting the cure of the scrofulous disease of the joints, it is necessary to bear in mind, that it depends on a certain morbid condition of the general system. It seems reasonable to expect that, when the local affection has once begun to exist, local remedies may be of service in checking its progress; but that, with a view to the ultimate result, such remedies, as operate on the constitution of the patient,

may be of as much, if not of more, importance, than any local treatment.

I cannot say that the abstraction of blood from the neighbourhood of the diseased joint is never useful; but it certainly is not necessary in ordinary cases. The state of the cancellous structure of the bones approaches to that of inflammation, and the cartilages have the appearance of being inflamed, before they begin to ulcerate; but the inflammation is of a specific kind, and, like scrofulous inflammation in other parts, is not likely to be relieved by the loss of blood in the same degree as common inflammation.

Leeches and cold evaporating lotions may, however, be employed with advantage for the purpose of arresting an accidental attack of inflammation induced by too great exercise of the joint or in any other way.

It rarely happens that any benefit is to be obtained from the application of blisters or liniment; and, indeed, this observation may be extended to the whole of that class of remedies, which are known by the name of counter-irritants. I much doubt whether setons and issues are ever useful, except in some cases in which the disease has its seat in the hip-joint, and in which the patient suffers, in an unusual degree, from pain and muscular spasms in the limb, apparently in consequence of the irritation communicated to the trunk of the anterior crural nerve.

There is, however, one rule respecting local treatment, which is applicable to all cases, and which can never, with safety, be disregarded. The diseased joint should be kept in a state of the most perfect quietude. All motion and pressure of the articulating surfaces against each other is likely to promote the ulceration of the cartilages, and hasten the formation of abscess. We cannot suppose that rest will contribute to the restoration of the bones affected with scrofula to a healthy condition; but it may do much towards preventing the disease extending to the other textures. With respect to the best mode of obtaining this important object, it seems scarcely necessary for me to offer any observations in this place, the subject having been already fully discussed formerly. I may, however, briefly remark, that the application of leathern splints is attended with the very best results, except where the disease is situated in the hip. I know of no kind of splints which are well adapted to these last mentioned cases; and the best substitute for them is stripes of linen, or leather, spread with a moderately adhesive plaster, laid over the joint, and retained by a long roller extending round the thigh and pelvis: the patient being at the same time placed on one of Mr. Earl's bedsteads, or otherwise on a common sofa, with the thigh supported by pillows.

During the formation of abscesses, fomentations and poultices may be employed, with a view to hasten their progress, and relieve pain: and they may be continued for some time after the abscess has burst; or simple dressings may be applied, according to circumstances.

When, after several abscesses have taken place, the disposition to suppuration appears at length to have ceased, and the swollen joint has



become diminished in size, it may be expected that a curative process, by means of ankylosis, is about to commence. At this period, pressure by means of stripes of linen, spread with soap cerate, or some other moderately adhesive plaster, and applied in a circular manner round the limb, will be productive of benefit. This will promote the healing of the sinuses; and, by more completely preventing the motion of the joint, will lessen the chance of fresh suppuration, and favor the union of the ulcerated bony surfaces.

If a portion of the bone has lost its living principle, and has exfoliated into the cavity of the joint, the chance of ultimate recovery is very much diminished. For the most part, the dead bone is so entangled in the living parts, that it is incapable of separation by a natural process; and every attempt to remove it by artificial means does but occasion a fresh attack of inflammation and abscess. It is to be observed, however, that bone which is found exposed at the bottom of a sinus is not necessarily doomed to exfoliate. It may be simply ulcerated, and may possibly granulate and recover; and the surgeon, therefore, is not warranted in giving a prognosis which is decidedly unfavourable, merely because he discovers a piece of exposed bone, when he makes an examination with a probe.

With respect to the constitutional treatment:—It is to be supposed that the air of a crowded city must be more or less unfavourable; and that a residence on the sea-coast is likely to be more beneficial than a residence in the country elsewhere. The patient should live on a plain but nutritious diet; and I know of nothing of more importance than this,—that he should be as much as possible out of doors, exposed to the fresh air in warm and temperate weather.

It is more difficult to appreciate the value of medicines in a disease which is so completely chronic, than in acute diseases; but, of those, which I have tried, it has appeared to me that preparations of steel are much more useful than any others. They must, however, be continued, with occasional intermissions, for a great length of time: for two or three years, or even for a longer period. Of course the operation of them must be carefully watched: purgatives should be occasionally exhibited; and the use of the steel should be suspended wherever a furred tongue or a hot skin indicates that the system is not in a fit state to receive it.\* Other tonics are useful also, especially

\* According to my experience, steel medicines are not in general administered in such a manner as to do all, which they are really capable of doing, towards improving that peculiar state of the constitution in children, which is usually distinguished by the appellation of scrofulous. The plan which I have been in the habit of pursuing for many years, and which I have found to be followed by the best results, is the following;—I give some simple preparation of the *Vinum ferri* (of the old Pharmacopœia,) for example, not in large doses, for a month: then I omit the use of it for a week or ten days; then give it for a month again, and so on for two or three, or even for four or five years. If it accelerates the pulse, or induces heat of skin, or a furred tongue, I do not hastily lay the medicine aside, but give it in smaller doses, and combine it with purgatives, until I find that it no way disagrees with the patient. The changes which take place under this system are very gradual, but they are not on that account the less distinct; and I have known

light bitters combined with the *liquor potassæ*; or the latter may be given separately in small beer, or in the infusion of cloves. The mineral acids may be exhibited when there is a disposition to night-sweats, or loss of appetite. I have no doubt that iodine or the hydriodate of potash, may be given with advantage in these cases, but I cannot say that I have found either the one or the other to be productive of those remarkable and most beneficial results which are obtained from the use of these remedies in some of the other diseases, to which the bones are liable. At all events, the iodine cannot be taken constantly, and it may very properly be made to alternate with the courses of steele medicine; or, in some instances, the iodine and steele may be given with much advantage at the same time. In all cases, great attention should be paid to the state of the digestive organs; the patient's diet should be as plain and as nourishing as possible; and where the excretions appear to be unhealthy, it will be right to have recourse occasionally to mercurial alteratives. Mercury exhibited in larger doses is invariably prejudicial.

When the organization of the joint is completely destroyed, and the constitution has become affected, so that the patient's health is evidently failing, there can be no doubt of the necessity of the local disease being removed by amputation: but a question concerning the expediency of this operation will often arise under other circumstances. The patient has hitherto not suffered with respect to his general health, or has suffered in a very slight degree: the condition of the diseased joint is such that ultimate recovery is very doubtful, and it is certain that no better cure is to be expected than that by means of ankylosis, and even this cannot be looked for except after the lapse of a considerable time. Is the chance of the ultimate preservation of an imperfect limb sufficient to repay the patient for all the trouble and pain, and anxiety, which he must undergo, in order that his object should be attained? Undoubtedly it is not, particularly with persons belonging to the lower classes of society, who have to support themselves by their bodily labour. There are, however, some other points to be taken into consideration; and altogether it is not so easy to determine respecting the propriety of an operation as, on the first view of the subject, it may appear to be.

A girl was admitted into St. George's Hospital who laboured under this disease in the bones and joints of the tarsus. Her foot was amputated by Mr. Griffiths. In about three weeks the stump was perfectly healed; but now she was seized with symptoms which indicated an affection of the mesenteric glands, which had not shewn itself previously, and she died. On dissection, numerous glands of the mesentery were found enlarged, and containing a cheesy matter. Another girl, whose arm I amputated on account of a scrofulous disease of the elbow, became affected in the same manner immediately after the stump was healed. She also died, and similar appearances presented themselves on dissection. A man whose leg was ampu-

instances in which the effect has been to render a child, which was the weakest and most delicate, the healthiest and strongest, member of a large family.



tated on account of a scrofulous disease of the tarsus, in a short time after the operation began to experience symptoms which indicated the incipient state of some pulmonic complaint: and soon afterwards the other foot became affected in the same manner as the first. These are a few of many cases which might be adduced, as leading to this conclusion, that the occurrence of this scrofulous disease, in a particular joint, may be the means of preventing the scrofulous disposition from showing itself in some other organ; and that if the affected joint be removed by an operation, there is more danger of disease breaking out elsewhere, than there would have been if the operation had not been resorted to.

But we may refer to another order of facts, as showing that there are occasions in which the amputation of a scrofulous joint, instead of rendering other organs more liable to the same disease, may actually produce the opposite effect of preserving them from it. It is to be observed, that such a disease of a joint is never more than the remote cause of death, and that, where the result is fatal, it invariably happens in the following manner. The patient is exhausted by a hectic fever, and, in this state of debility, disease takes place in the mesentery or lungs, or not unfrequently in both of these parts at the same time, and it is this visceral affection which immediately precedes dissolution. It is evident, then, that in many cases there is a period of time at which the amputation of the limb may be the means of preventing the establishment of a secondary disease. Nor is this all. Visceral disease, which was previously in a state of inactivity, may assume a new form, and begin to make a rapid progress, under the influence of the disease of the joint; and amputation, under these circumstances, may be the means of preserving the patient, if not altogether, at least for a considerable time, perhaps for several years. A young woman was admitted into the hospital labouring under scrofulous affection of the ankle. It was of long standing, and there were several abscesses communicating with extensive surfaces of carious bone. It was evident that there was no chance of cure for the disease in the joint. Nevertheless I did not think it right to propose to the patient that she should submit to the loss of the limb, as she had a troublesome cough, with a purulent expectoration, and other marks of pulmonary disease. She, however, earnestly implored that the ankle might be removed, and at her request and certainly against my own judgment, I performed the operation. The stump healed readily. The pulmonary symptoms almost immediately subsided; and when I last heard of her, four or five years after the operation, she continued alive and well.\*

It is evident, from these statements, that the question concerning amputation is, in many instances, one of a complicated nature, requiring the exercise of no small degree of judgment and discrimination on the part of the surgeon, and not to be determined, except after a

\* In the last edition of this work I gave another account of the termination of this case, which I have since found to be erroneous.

minute investigation of the whole case, with respect to the disease in the joint itself, and also in whatever relates to the state of the general health at the time, and that of the constitution previously.

---

In cases, which have a more favourable termination, the joint is left in various conditions, accordingly as the disease had been more or less advanced at the period when its progress was arrested. If it has received a very early attention, the functions of the joint may be wholly unimpaired; the ulcerated surfaces being cicatrised without the formation of adhesions. Under these circumstances the place of the cartilage, which has been absorbed, is supplied by a membranous substance, and I am not justified in asserting that this may not be capable of assuming ultimately the true cartilaginous structure.

In other instances, adhesions are formed between the articulating surfaces; and as these are of greater or less extent, so are the functions of the joint more or less impaired. Whatever may be the degree of mobility, which it retains, it is generally to be regarded as so much advantage to the patient, but not always. For example: in the joint of the knee it is not uncommon to find the patella completely united to the condyles of the femur, while the head of the tibia admits of a considerable degree of flexion and extension. This partial degree of mobility is productive of no small degree of inconvenience, and the patient would, in fact, be in a much better state if the ankylosis were complete in every part, as, in consequence of the fixed state of the patella, he has no power to act on the leg by means of the extensor muscles. The joint is indeed movable but its motions are not under the control of the will.

When recovery takes place after the formation of an abscess communicating with the joint, the bones are every where united by adhesions, and there is complete ankylosis. Bony ankylosis, however, is rare in this disease, and at any rate is not established until after the lapse of many years. It is never prudent to have recourse to any mechanical means for the purpose of preventing ankylosis taking place, lest a fresh attack of inflammation and abscess should be the consequence. We may, however, venture, when the circumstances of the case require it, to adopt measures for the purpose of gradually placing the limb in a more commodious position. For example: when the knee has been affected, if left to itself, it often happens that the leg becomes fixed at a right, or even an acute angle with the thigh; and a light apparatus may be applied to the limb, with a screw to the posterior part, by the agency of which the leg may be very slowly and cautiously extended. In like manner, if the elbow be in danger of being ankylosed in the straight position, it may be very gradually brought into a state of flexion. It is scarcely necessary to explain wherefore in the knee joint, the straight position is to be preferred to the bent; while in the elbow it is desirable to obtain the latter position instead of the former.



## SECTION IV.

## CASES OF THIS DISEASE.

SEVERAL of the cases related in the first section will serve to explain the principal circumstances of this scrofulous affection of the joints in its most aggravated form.

The following exhibit it in its less advanced stages, where it is still capable of a cure. It may be presumed that in these cases, the original disease was that morbid condition of the cancellous structure of the bones, which has been just described, since the symptoms exactly corresponded to those which have occurred in other cases, and which have been proved by dissection to be of this nature.

## CASE LVII.

William Moulds, six years of age, having a scrofulous aspect, was admitted into St. George's Hospital, on the 23d of February, 1814.

His left knee was an inch and a half in circumference larger than the other. The swelling was puffy and elastic; without fluctuation: having nearly the form of the articulating extremities of the bones; but filling up the space on each side of the patella. The joint admitted of considerable motion, but not of complete flexion and extension. He complained of pain, which was worse at night; but never very severe. It was somewhat aggravated by pressure.

His parents attributed the complaint to some trifling hurt, which he had met with a year ago; soon after which, a slight degree of pain and tumefaction was first observed, which had continued ever since, and had increased, particularly within the last month.

On his admission, with a view to the relief of the external inflammation, blood was taken from the knee by means of leeches and cupping. A cold lotion was applied; and he was directed to take  $\mathfrak{z}\text{i}$ . of the *vinum ferri*, with a few drops of the *tinctura ferri, muriatis*, three times in the day. On the 3d of March, the knee was bound up in stripes of linen spread with soap cerate, chiefly with a view to restrain the motion of the diseased joint, without interfering with the patient's taking exercise.

March 20. The swelling was somewhat diminished; and he did not complain of pain.

April 1. He was in all respects better. As the former preparations of iron had begun to disagree with him, they were changed for ten grains of the carbonate, given three times in the day.

April 20. Scarcely any swelling of the joint remained; and there was no pain or stiffness. He quitted the hospital.

## CASE LVIII.

A. B., a handsome boy, having blue eyes and light hair, in the year 1806 had a scrofulous enlargement of some of the glands of his neck, which suppurated and burst.

In the month of June, 1810, being then eight years of age, he was observed to limp in walking; but he did not complain of pain, and little notice was taken of this circumstance.

In the beginning of December, 1810, some degree of tumefaction was observed of the left instep and ankle. About the end of this month he received a trifling hurt of these parts; and now the pain of the ankle, which before had been so slight that he scarcely spoke of it, became more considerable, and he was unable to walk. A gentleman who was consulted, directed the application of blisters, but they were productive of no relief.

In the middle of January, 1811, when I was first consulted, there was a puffy elastic swelling on each side of the ankle and instep; there was scarcely any pain where the joint was perfectly quiet; but on attempting to use it, the pain was more considerable, and it was particularly aggravated when the heel was pressed upwards against the bones of the leg. In other respects he was in perfect health.

I directed him to take the sulphate of iron internally, and to avoid all exercise of the joint, walking only on crutches, and so as never to place the foot in contact with the ground. Stripes of linen spread with soap cerate were applied, for the purpose of more effectually restraining motion.

I did not see him again until the beginning of March, when the pain and swelling were found to be somewhat diminished. As the stripes of soap cerate did not seem sufficiently to answer the intended purpose, a light pasteboard splint was applied on each side of the leg and foot and secured by means of a bandage.

April 12th. The puffy swelling was evidently diminished, and there was no pain, even when the heel was pressed upwards against the tibia. The same treatment was continued.

May 26th. The swelling was farther diminished; and, on the 29th of June, the affected foot and ankle scarcely differed in appearance from the other. He was free from pain even on motion. The splints were left off, but it was directed that he should continue to wear the bandage. He was allowed occasionally to put his foot on the ground.

July 20th. He continued well. He went to the sea-side, with directions to continue the steel medicine, and to bathe in the sea twice in the week.

## CASE LIX.

George Lavel, nine years of age, and having a scrofulous appear-



ance, in January, 1817, complained of an aching in his left elbow, and in about two or three months it was observed that the elbow was swollen. In May, 1817, he became an out-patient of St. George's Hospital. At this time the elbow was swollen and painful; but the pain arose chiefly from an abscess which presented itself underneath the skin on the inside. After the abscess had burst, it was observed that the swelling, so far as it was independent of it, was not considerable, and that seemed to arise entirely from an effusion of serum, and coagulated lymph into the cellular membrane external to the joint. From this time he suffered very little pain, until the beginning of January, 1818, when another abscess began to show itself on the outside of the elbow. On the 28th of January he was received as an in-patient of the hospital. The joint now admitted of very limited motion. Whenever it was moved or when the articulating surfaces were pressed against each other, he complained of some, but not of severe pain. He kept the fore-arm in the half-bent position, and walked about, supporting the hand in a sling, with very little inconvenience.

In the beginning of February, he was directed to take six grains of carbonate of iron three times in the day; and a purge of calomel and rhubarb was administered occasionally. The abscess was opened, and a poultice was applied.

March 1st. The joint was smaller, but he was feverish, and suffered pain at night.

March 21st. The swelling was much diminished, the pain had abated; he slept well at night, and was free from fever.

In the middle of May there was a recurrence of pain in the joint, and another abscess presented itself on the outside, which was opened on the 19th of May. After this a fourth abscess formed on the fore-part of the elbow, and broke on the 23d of June.

July 4th. There was little or no swelling. He was free from pain; the abscess continued open, discharging a very small quantity of matter.

The poultices and fomentations, which had been hitherto employed during the formation of the abscesses, were now left off, and some simple dressings, and a bandage, were applied in their stead. The swelling continued to subside; he had no return of pain or abscess. On the 4th of September, the joint was not larger than the other; it admitted of much more motion than formerly; there was no pain; there was still one sinus, which was not completely closed, and which discharged a minute and almost imperceptible quantity of matter: all the other abscesses were completely healed.

The three preceding cases will serve to illustrate the history of this disease; but that which follows affords a better example of the treatment, which I have of late years been led to adopt for its relief, and which, according to my experience, is, on the whole, much more successful than any other.

## CASE LX.

Master H. K., being at the time two years of age, was brought from the country for my opinion, concerning a disease in his knee, in the latter part of December, 1831.

The right knee was enlarged. The leg was half bent on the thigh, and the joint admitted of motion to only a limited extent. The swelling manifestly arose, not from fluid in the cavity of the synovial membrane but from an effusion of lymph and serum in the cellular membrane external to it. The projecting condyles of the femur presented the usual rounded appearance which is observable in cases of the scrofulous disease of this articulation. The child complained very little, or not at all, of pain. There were no marks of derangement of the general health.

The enlargement and stiffness of the knee had been first observed about the end of the preceding October, and had gradually increased up to the time of my being consulted. A pasteboard splint was applied on each side of the joint; the *vinum ferri* was prescribed to be taken twice daily for three weeks for a month, then omitted for a week or ten days, and then to be given for a month again, and so on. It was also directed that some calomel should be administered about once in three weeks, with an occasional dose of rhubarb and sal polychrest in the intervals; that he should be taken back into the country; that he should be drawn out of doors in an open carriage, so as to be exposed to the fresh air for some hours daily, in fine weather; and lastly, that he should be prevented, as much as possible, from using the limb.

May, 1832. I saw the patient again in London. The disease had made no manifest progress. I recommended that he should go again into the country, and pursue the same plan of treatment in all respects.

Soon afterwards a swelling was observed, for the first time, on the inside of the thigh immediately above the knee.

September, 1832. The joint itself appeared diminished in size, but the swelling on the inside of the thigh had increased. It manifestly contained fluid, and had all the appearance of an abscess. No alteration was made in the treatment.

In May, 1833, when he was brought to London; for the fourth time, the collection of fluid in the inside of the thigh was much reduced. The swelling of the knee was diminished also. The same remedies were directed as before.

In June, 1833, the swelling on the inside of the thigh had altogether disappeared. The diseased knee was scarcely larger than the other; but it was stiff, and the leg was bent to a right angle with the thigh.

It was now directed that the splints should be left off, and that an instrument should be applied at the back part of the limb, attached to the thigh and leg, so as to give much support to the joint at the



same time that it was furnished with a screw, by means of which the leg might be very cautiously and gradually extended. No change was made in the treatment in other respects.

The machine completely answered the purpose for which it was intended. In a fortnight after it was first applied, the little boy was able to walk across the room without difficulty, and altogether it was so convenient, that he was allowed to wear it during the night, by his own express desire.

In August, 1833, the leg was much straighter, and, in other respects, the joint was in a better state than at any former period.

January 20, 1834. The knee was reduced to nearly its natural size. There were no perceptible remains of the swelling which had been supposed to be an abscess. The leg was bent only in a very slight degree, and the patella moved readily over the condyles of the femur. The little boy's health was good; he was free from pain, and he could walk tolerably well with the aid of the instrument. It was advised that he should return into the country, and continue on precisely the same plan of treatment as heretofore, except being allowed to exercise the limb more freely.

---

The following case is interesting in a pathological point of view, illustrating, as it does, the morbid changes which the disease produces in the various stages of its progress. It is, however, introduced in this place, as it shows to what extent the symptoms may be modified and aggravated by an accidental, and apparently trivial circumstance.

#### CASE LXI.

Captain D., in mounting his horse, some time in the year 1820, experienced an acute pain in the right hip, which was not however of long duration. He afterwards felt, occasionally, similar sensations, which were induced by walking, but they were not severe, and therefore attracted very little of his attention.

In December, 1822, he was attacked with pain in the same hip, which did not subside as formerly, it occasioned lameness, so that he could not proceed many yards without stopping to rest. This pain increased; and, in February, 1823, he suffered so much that he was wholly incapable of going from home, except in a carriage. He now consulted an eminent surgeon, who recommended the application of leeches, blisters, &c. One evening, after the application of leeches, he had a paroxysm of violent pain, attended with spasmodic action of the muscles of the thigh. The pain, during this attack, was so excruciating, that, to use his own expression, he wished for immediate death. He took not less than 150 drops of laudanum before he obtained relief. From this time, however, he was never wholly free from pain; and he was also liable to repeated attacks of more intense suffering, attended with violent spasms of the muscles of the thigh.

The slightest motion of the limb induced one of these attacks of spasm, during which the thigh was jerked in a most remarkable manner. He was in this state when I was first consulted, in the summer of 1823. In september, 1823, the spasmodic affection gradually subsided; and in the course of the October following a tumour presented itself on the anterior part of the thigh, in the situation of the femoral blood-vessels. The tumour appeared to contain fluid, and in one part of it a pulsation was perceptible, which might have led a superficial observer to mistake it for an aneurism. About the same time, he became affected with a cough, lost his appetite, was languid and exhausted by the slightest exertion. Soon afterwards he expectorated pus; and he died with symptoms of *phthisis pulmonalis*, on the 11th of December.

On examining the body after death the lungs were found extensively diseased, containing tubercles, many of which were in a state of suppuration. The cartilages of the right hip were destroyed by ulceration, and the bones of the joint were in a state of caries. On making a section of the head of the femur, it was found to contain a less quantity of earthy matter than exists in a healthy bone, with a deposit of yellow substance in its cancellous structure. The synovial membrane and capsular ligament were considerably thickened, and a mass of coagulated lymph had been deposited round the neck of the femur. There was a collection of thin pus among the muscles on the anterior part of the thigh, below the hip-joint but communicating with it. The tumour thus formed was of the size of a large orange, and, being situated under the femoral artery, the latter was thereby raised out of its natural situation. There were two enlarged lymphatic glands, each of the size of a walnut, immediately below the crural arch, on the forepart of the joint, and these lay in contact with, and immediately behind, two branches of the lumbar nerves, so as to keep the latter on the stretch, like the strings passing over the bridge of a violin. This last-mentioned circumstance seemed to afford a reasonable explanation of the spasmodic affection to which the patient had been liable; and which probably had become relieved in consequence of some degree of diminution in the size of the glands after the escape of the abscess from the joint.

No disease had been supposed to exist in the left hip-joint previous to the patient's death. But, on examining it afterwards, the head of the femur was found to be softer than natural, so that it could be divided with a scalpel. In some parts the vascularity of the bone was preternaturally increased. In other parts the vascularity seemed to be less than natural, and a yellow cheesy substance had been deposited in its cancelli. The synovial membrane and ligaments of the left hip were in a natural state.

---

In concluding this chapter, I have one farther observation to offer, which may be of some importance to those who are engaged in studying the pathology and investigating the morbid anatomy of the joints.



In the disease of which I have just treated, the bones are rendered preternaturally soft, so that they may be cut with a scalpel without turning its edge, or even crushed between the fingers. But this softened state of the bones is only one of the morbid changes which scrofula induces in these textures; and we are not hastily to conclude, where we meet with the bones thus deprived of their earthy matter, that this is always the original malady. In a patient who met with a compound fracture of the leg close to the ankle, and who died some time after the accident, I found, on dissection, the fractured surfaces in a state of caries, and the neighbouring portions of the tibia and fibula as soft as they would have been in the most scrofulous subject. I have seen a number of other cases, which prove that a preternatural softness may occur as a consequence of inflammation and caries affecting a bone which was previously in a healthy state. In cases of primary ulceration of the cartilage, the morbid appearances are at first confined to the cartilage and bony surface, to which it is connected. When the disease is farther advanced; when the bones are extensively ulcerated, and inflammation has taken place in their substance; the earthy matter becomes absorbed, and the bones lose their natural hardness, so that they may be divided with little force. If we find the bones deprived of a large portion of the earthy matter, and this change connected with extensive destruction by caries, but without that effusion of serous fluid, and yellow cheesy substance into the cancelli, which has been formerly described, we may well doubt whether this morbid change be not the consequence, rather than the cause of the caries with which it is combined. At any rate, it is to the examination of cases in which the disease is in its early stage, and not of those in which it has made great ravages, that we are to look chiefly for pathological information as to the nature of the morbid action which has taken place, and the particular texture in which it has had its origin.

## CHAPTER VI.

### ON CARIES OF THE SPINE.

#### SECTION I.

##### PATHOLOGICAL OBSERVATIONS.

It is obvious, from the structure of the joints between the bodies of the vertebræ, that they can be liable to no diseases bearing any re-

semblance to the affections of the synovial membrane, which occur in other articulations. But analogy would lead us to expect, what experience demonstrates, that those diseases, which commence in the harder textures, may occur here as elsewhere, and that an extensive caries of the spine may have its origin, sometimes in an ulceration of the intervertebral cartilages, and at other times in a morbid condition of the cancellous structure of the bodies of the vertebræ.

In one of the cases which have been related in a former chapter, where ulceration of the articular cartilages had begun in several other parts, those between the bodies of some of the dorsal vertebræ were found to have been very much altered from their natural structure. I had an opportunity of noticing a similar morbid condition of two of the intervertebral cartilages in a patient, who some time after having received a blow on the loins, was affected with such symptoms as induced Mr. Keate to consider his case as one of incipient caries of the spine, and to treat it accordingly, with caustic issues; and who, under these circumstances, died of another complaint.

Opportunities of examining the morbid appearances in this very early stage of disease in the spine are of very rare occurrence, but they are sufficiently frequent where the disease has made greater progress; and in such cases I have, in some instances, found the intervertebral cartilages in a state of ulceration, while the bones were either in a perfectly healthy state, or merely affected with chronic inflammation, without having lost their natural texture and hardness; while in others it has been manifest that the original disease has been that peculiar scrofulous condition of the bones, the effects of which in the bones and joints of the extremities have been described at length in the preceding chapter.

The following cases illustrate the foregoing observations, and (if I am not mistaken) will be found to explain the whole of the pathological history of caries of the spine, with the exception of those circumstances which I shall have occasion to notice when describing the symptoms, which the disease exhibits in the living person.

## CASE LXII.

Christiana Clear, a girl eight years of age, was admitted into the Infirmary of the parish of St. George, Hanover Square, in the year 1808, on account of a disease of the spine. At this time the upper part of the spine was bent forward, and the spinous process of some of the dorsal vertebræ formed a preternatural projection at the posterior part; but still she was able to walk without assistance.

Soon after her admission an abscess presented itself, and burst in the groin; and this was followed by a second abscess, which burst near the former.

The child was now under the necessity of being confined entirely to her bed. The abscess continued to discharge pus. She became affected with hectic fever; nevertheless, more than two years elapsed



from the time of her having been first admitted into the infirmary before she died.

The body was examined by Mr. Howship, to whom I am indebted for this account of the case. It was universally anasarcaous. The abdominal muscles were so wasted, that scarcely any vestige of them was perceptible. This probably arose from the circumstance of the child having remained in bed for so long a time previous to her death, and having scarcely ever varied her position.

At the posterior part of the abdomen, there was a confused mass of soft substance, which proved to be the parietes of an abscess communicating with the orifices in the groin.

The bodies of the lowest dorsal and three superior lumbar vertebræ were found at the posterior part of the abscess, nearly consumed by caries. There were no remains of the intervertebral cartilages between the tenth and eleventh dorsal, nor of those between the third and fourth lumbar vertebræ. These intervertebral spaces were filled with pus; and the opposite surfaces of the vertebræ were carious but only to a small extent. The central part of the intervertebral cartilage between the ninth and tenth dorsal vertebræ had been completely absorbed, and pus was found in its place. Externally to this, the concentric layers of elastic cartilage were entire, though somewhat altered from their natural appearance.

### CASE LXIII.

Mr. M., a young man, in the summer of 1816, became affected with pain in his back, and general debility, which he attributed to his having lain on damp ground, while in the Island of Ascension, in the preceding March. In the beginning of September he sailed for England, being compelled to return home, on account of the state of his health.

In February, 1817, he arrived in London; complaining of pain in the back, and numbness of the thighs. Soon afterwards, on examining the spine, it was observed that that part of it, which is formed by the dorsal vertebræ, was incurvated forward, and that there was an evident lateral incurvation also. After this, an abscess burst in one groin, and continued open, discharging a large quantity of matter. The lower extremities became imperfectly paralyzed; he lay constantly on one side, with the thighs drawn forward, so that his knees nearly touched his chin, and never varied from this position. He lingered until the 10th of August, 1818, when he died.

On inspecting the body, I found an abscess, which occupied nearly the whole of the anterior surface of the spine, from the upper part of the posterior mediastinum as low as the pelvis, and which communicated with each groin, extending downwards in the direction of the psoæ muscles. In many parts, in consequence of the contact of the matter of the abscess, the bodies of the vertebræ, and even the heads of the ribs, were affected with a superficial caries.

There were no remains of the intervertebral cartilage between the fourth and fifth dorsal vertebræ, and the opposite surfaces of these two vertebræ were consumed by caries to some extent, and hence arose the curvature of the spine forward; and they were consumed to a greater extent towards the left side than towards the right, and hence arose the lateral curvature.

The intervertebral cartilages between the eleventh and twelfth dorsal vertebræ had also entirely disappeared, and the opposite surfaces of these bones were in a state of caries; but this had not extended itself sufficiently to occasion any sensible loss of bony substance.

The intervertebral cartilages between the third and fourth, fifth and sixth, seventh and eighth, tenth and eleventh dorsal vertebræ, and also that between the twelfth dorsal and first lumbar vertebræ, were all found in a perfectly natural state towards the circumference; but in the centre they were of a dark colour; and on the surfaces towards the bones they, as well as the bones themselves, were in a state of incipient ulceration, but without any appearance of pus having been secreted.

All the other intervertebral cartilages were, throughout their whole substance, in a natural condition; and the bones of the vertebræ every where had their natural texture and hardness. On laying open the theca vertebralis, the membranes of the spinal marrow were found adhering together, behind the space between the fourth and fifth dorsal vertebræ.

#### CASE LXIV.

Mary Price, sixteen years of age, was admitted into St. George's Hospita, on the 24th of December, 1828.

She complained of pain in the loins, which was aggravated by pressure made in the situation of the upper lumbar vertebræ, and by sitting erect.

She also complained of pain in the left hip, which was more severe during the night than in the day, and attended with painful startings of the limb. The pain extended from the groin downwards, and was aggravated by exercise, and by pressure on the great trochanter.

She was confined to her bed in the horizontal posture; and an issue was made with caustic in the left loin.

Under this treatment, the symptoms were almost entirely relieved. But she now began to complain of a cough, attended with pain in the chest, and difficulty in making a full inspiration. Soon afterwards she expectorated pus; and she died on the 18th of March.

On dissection tubercles with a considerable abscess were found in the left lung.

There was a small abscess lying behind the left psoas muscle, which communicated with a space between the fourth and fifth lumbar vertebræ, formed by the ulceration of the intervertebral cartilages and the adjoining surfaces of the vertebræ. The bones of the vertebræ retain-



ed their natural hardness, but were of a pale colour, apparently in consequence of their possessing a somewhat smaller degree of vascularity than under ordinary circumstances.

In the left hip-joint the synovial membrane appeared to be a little more vascular than usual. In the neighbourhood of the insertion of the round ligament the cartilage of the acetabulum had disappeared, but it had been replaced by a membranous substance, adhering to what would have been otherwise an exposed surface of bone. In another spot, at the upper part of the acetabulum, the cartilage had also disappeared, and the bone itself had become exposed. The bone, however, was hard and compact, and rather more elevated than the bone in the neighbourhood, so as to justify the notion that it had become cicatrized after having been in a state of caries.

### CASE LXV.

Charlotte James, nineteen years of age, was admitted into St. George's Hospital on the 30th of May, 1821. About a month before her admission she had experienced pain in the loins, which was relieved by cupping. At the time of her admission she had violent pain in the left lower limb, from the hip to the foot; and soon afterwards she again complained of pain in the loins; about the same period a tumour presented itself in the loins, on the right side. Her constitution also became affected with hectic symptoms.

On the 2d of June the tumour was punctured, and sixteen ounces of pus were evacuated. Another abscess presented itself in the groin.

The hectic symptoms continued; she gradually sunk, and died on the 3d of August.

On dissection the bodies of the three or four inferior lumbar vertebræ were found preternaturally vascular, and of a dark, and almost black colour; but they retained their natural texture and hardness, and had undergone none of those changes which mark the existence of the scrofulous affection of the bones. The intervertebral cartilages were in a natural state; but the body of one of the vertebræ was superficially ulcerated for about the extent of a sixpence on one side, towards the posterior part. A large abscess communicated with the ulcerated surface, and occupied the situation of the psoas muscle of the left side, extending downwards to the groin.

### CASE LXVI.

Edward Griffiths, forty-five years of age, was admitted into St. George's Hospital, on the 15th of April, 1818, on account of an abscess, which presented itself in the left groin. He said that about four months before his admission, he had been seized with pain in the

loins, and that the tumour in the groin had appeared about six weeks after the commencement of the pain.

He was directed to remain constantly in the horizontal position; and in a short time the tumour formed by the abscess in the groin disappeared, and another showed itself over the left *os innominatum*. On the 15th of May, this abscess was opened, and about forty ounces of pus were discharged. After this, he gradually sunk, and died, worn out by profuse suppuration, on the 19th of August following.

On dissection, it was found that the cancellous structure of all the dorsal and lumbar vertebræ was of a dark red colour, and softer than natural, so that they might be cut with a common scalpel, or even crushed by the pressure of the thumb and fingers.

The opposite surfaces of the bodies of the second and third lumbar vertebræ, and of the cartilage between them, at the posterior part, were extensively destroyed by ulceration. Anteriorly, the bones and the intervertebral cartilage were entire, and the latter was in a perfectly natural state; but the bones throughout were of a dark and almost black colour.

On one side of the body of the twelfth dorsal vertebra, there was a small ulcerated spot, forming an opening, which extended itself into a small cavity into the centre of the bone. This bone was also of a black colour; but the intervertebral cartilages belonging to it, as well as the intervertebral cartilages connected with the other vertebræ, were in a perfectly natural state.

The abscess had originated in the carious surfaces of the second and third lumbar vertebræ, and had extended itself behind the left psoas muscle, as low as the upper and anterior part of the left thigh; where it made a turn backwards on the inside of the tendon of the psoas muscle, and thus made its way to the place where it was opened on the posterior part.

The ribs were throughout unusually vascular and brittle, so that they might be broken by the slightest force. There were vomicæ in the lungs, and tubercles in the liver.

#### CASE LVII.

Henry Shaw, seventeen years of age, consulted Mr. Earle in November, 1816, on account of a complaint which had begun about three months before, and of which the following were the most remarkable symptoms:—

He had frequent attacks of pain in the head, attended with giddiness. Occasionally he had fits, in which he was for a short time insensible, with a spasmodic action of some of the muscles of the neck. The right eye was amaurotic, and there was constant tinnitus aurium. His mental faculties were for the most part unimpaired.

By Mr. Earle's directions, he was cupped; purgatives were administered, and he was kept under the influence of mercury during six weeks, at the end of which time his symptoms had nearly disappeared.



About the end of May, 1817, he went on a visit into the country; and while there, he one day tripped and fell in crossing the room. Another set of symptoms now showed themselves, for which he was brought to London. At this time he had pain in the back and in the right side, shooting in the direction of the costal nerves. He was subject to severe cramps in the stomach; his bowels were irregular; and he breathed with difficulty. He had cramps in his lower limbs, and his locomotive powers were impaired, though there was no actual paralysis of the muscles. His general health was much deranged. On examining the spine, Mr. Earle discovered a curvature, of which the convexity was turned backwards, occupying about the three middle dorsal vertebræ; and this was attended with a considerable alteration in the form of the chest. He was now removed into St. Bartholomew's Hospital, where Mr. Earle directed him to remain constantly in the horizontal position, and an issue was made with caustic on each side of the spine. In a short time he lost the cramps of his lower extremities; but his general health continued to fail, and the difficulty of breathing increased.

In the middle of December he quitted the hospital. The exertion of being moved seemed to aggravate the disease. He was seized with numbness of the left leg and thigh; the dyspnœa became worse; and he sunk and died in convulsions, on the 23d of December, 1817.

On dissection, the arachnoid membrane was found opaque and thickened. A large tumour, of almost cartilaginous hardness, was found in the anterior lobe, and a similar one in the posterior lobe, of the right hemisphere of the cerebrum; and a third tumour occupied the greater part of the right lobe of the cerebellum. The ventricles were distended with water.

The right lung was studded with tubercles, and adhered universally to the pleura costalis. There was a large abscess of the posterior mediastinum; at the bottom of which, the bodies of two of the vertebræ, together with the intervertebral cartilage between them, were found nearly destroyed by ulceration. The other intervertebral cartilages were in a natural state; but the bodies of the vertebræ were soft, and many of them were beginning to ulcerate. The ribs were porous, their cancelli being filled with a curdly matter; and they were soft, so that they might be divided with a scalpel. Four of the ribs were separated from their attachment to the spine, and were ulcerated as far as their tubercles.

---

It is unnecessary for me to adduce other cases of caries of the spine in which I had the opportunity of examining the appearances after death, and which did not essentially differ from those already related. The pathological history of the disease may be thus briefly recapitulated.

In some instances it has its origin in that peculiar softened, and otherwise altered condition of the bodies of the vertebræ, the appearance of which in the bones belonging to other joints, has been described in

the last chapter, and which seems to be connected with what is called a scrofulous state of constitution. In these cases ulceration may begin on any part of the surface, or even in the centre of the bone, but in general the first effects of it are perceptible where the intervertebral cartilage is connected with it, and in the intervertebral cartilage itself.

In other cases the vertebræ retain their natural texture and hardness, and the first indication of the disease is ulceration of one or more of the intervertebral cartilages, and of the surfaces of bone with which they are connected.

There is still another order of cases, but these are of more rare occurrence, in which the bodies of the vertebræ are affected with chronic inflammation, of which ulceration of the intervertebral cartilages is the consequence.

In whichever of these ways the disease begins, if not checked in its progress, it proceeds to the destruction of the bodies of the vertebræ and intervertebral cartilages, leaving the posterior parts of the vertebræ unaffected by it; the necessary consequence of which is, an incurvation of the spine forward, and a projection of the spinous processes posteriorly.

At this period of the disease the membranes of the spinal chord sometimes become affected with a chronic inflammation, which may extend even to the spinal chord itself; and where there is much incurvation, the latter not only becomes incurvated with it, but actually compressed in such a manner as cannot fail to interfere with the due performance of its functions.

Suppuration sometimes takes place at a very early period; at other times, not until the disease has made considerable progress. The soft parts in the neighbourhood of the abscess become thickened and consolidated, forming a thick capsule, in which the abscess is sometimes retained for several successive years, but from which it ultimately makes its way to the surface, presenting itself in one or another situation, according to circumstances.

In the advanced stage of the disease, new bone is often deposited in irregular masses on the surface of the bodies of the neighbouring vertebræ, and where recovery takes place, the carious surface of the vertebra above coming in contact with that of the vertebra below, they become united with each other, at first, by soft substance, afterwards by bony ankylosis. The disposition to ankylosis is not the same under all circumstances: it is much less where the bones are affected by scrofula than where they retain their natural texture and hardness; and this explains wherefore, in the former class of cases, a cure is affected with more difficulty than in the latter.

Occasionally, portions of the ulcerated or carious bone lose their vitality, and, having become detached, are found lying loose in the cavity of the abscess. It is scarcely necessary to add, that the existence of such exfoliations is of itself almost sufficient to preclude all chance of the patient's recovery.

The foregoing observations are intended to apply to cases of caries of the spine originating in the spine itself; but those who are engaged in investigating the morbid anatomy of these diseases, will find it nec-



essary to distinguish between these and other cases, which may at first appear to be of similar, but which are in reality of a different nature. The long-continued pressure of an abscess which has originated in the neighbouring soft parts; of an aneurism of the aorta; of a mass of enlarged lymphatic glands, or of any other tumour; may produce ulceration of the bodies of the vertebræ: and here we find the intervertebral cartilages in general to be very little, or not at all affected; so that they are left projecting nearly or quite of their natural size, while the bones themselves are in a great degree consumed. In such cases, where the spine is carious in consequence of disease beginning external to it, the symptoms are not the same as where it has begun in the spine itself. For the most part, the affection of the spine is not suspected during the patient's life-time; and after death it is easy to trace the origin of the disease in the contiguous parts.

Not unfrequently, however, we find caries from disease of the spine itself complicated with caries from external pressure. For example, disease of the vertebræ, or intervertebral cartilages, occasions caries, and this is followed by the formation of abscess. The matter having become accumulated in considerable quantity, the abscess occupies a large space; and by its pressure on the surfaces of the vertebræ in the neighbourhood, causes an extensive caries of them far beyond the boundaries of the original disease.

---

## SECTION II.

### ON THE SYMPTOMS OF CARIES OF THE SPINE.

As these diseases of the spine correspond in this respect, that they terminate in a more or less extensive caries, it may be expected that there must be a certain degree of resemblance in the symptoms which they produce. This resemblance is, indeed, greater than where the same morbid affections take place in other joints. I suspect that, where the disease is of scrofulous origin, affecting the cancellous structure of the bones, it is more immediately followed by suppuration, than where it commences in the form of ulceration of the intervertebral cartilages; and that in cases of the latter description the pain and tenderness in the situation of the carious portion of the spine is more considerable than in those of the former. But farther than this, nothing, which I have hitherto observed, enables me to point out any circumstances, in which the symptoms of these different diseases differ; nor do I believe (however desirable it may be to do so,) that it is possible, in the present state of our knowledge, to distinguish them from each other, with any degree of certainty, in the living person. Perhaps future observations may throw light on this important subject. In the mean time, when I speak of the symptoms of caries of the spine, it is to be understood that the observations which I make are,

as far as I know, applicable to the various cases of this description; those only excepted, in which the caries is a secondary affection, the consequence of the pressure of a tumour in the neighbourhood.

Caries of the spine usually occurs in those who are either originally of a weak constitution, or whose bodily powers have become diminished under the influence of some previous ailment. Thus we find it following scarlet fever, small-pox, a simple continued, or rheumatic fever, or a protracted or ill-conducted mercurial course. In some cases, however it takes place under very different circumstances, and individuals are attacked by it, who were previously in a state of perfect health.

It is evident that, independently of the effects which, in its most advanced stage, it produces on the general system, two orders of symptoms may be the result of this disease. 1st, Those which are the immediate consequence of the morbid condition of the vertebræ themselves, and of the intervertebral cartilages. 2dly, Those which arise from pressure on the spinal chord, or from irritation, propagated in some way or another to this important part of the nervous system, or to the nerves to which it gives origin; and these symptoms may be thus briefly enumerated:—

1st. Pain and tenderness in the situation of the carious vertebræ.

2dly. Curvature of the spine forward, with an angular projection of the spinous processes posteriorly, the result of the bodies of the vertebræ having been destroyed, while the other parts of these bones remain entire.

3dly. Abscess commencing imperceptibly, but at last presenting itself as an external tumour.

4thly. Pains, loss of sensation, coldness, muscular spasms, and paralysis of the extremities.

5thly. Derangement of the functions of the various viscera, which are capable of being influenced by that portion of the spinal chord which is implicated in the disease.

But the whole of these symptoms are not met with in every instance; nor do those which actually exist always show themselves in the same order. They are modified and altered according to a variety of circumstances, and to such an extent, that a history of them which is applicable to one case, may be found to be wholly inapplicable to another. In fact, there is scarcely any disease which presents itself under a greater number of forms, or in which, in the early stages, at least, so much experience and discrimination are necessary to enable us to form a right diagnosis.

In the majority of cases, the first symptom which the patient notices, is pain referred to that part of the spine in which the caries exists; at first trifling, but becoming more severe afterwards. The pain is aggravated by any sudden motion of the spine; by percussion or by a jar communicated to it in any other way; as by stamping on the ground, striking the foot accidentally against a stone, sneezing, or coughing. In the advanced stage of the disease the pain is sometimes so severe, and so easily induced, that the patient cannot bear



the slightest movement. Yet, in other cases, there is sometimes no pain in the spine whatever, from the first access of the disease to its termination. I was consulted concerning a young gentleman, in whom, judging from the degree of distortion, I was satisfied that the bodies of not fewer than four or five of the dorsal vertebræ must have been wholly destroyed and that the disease had been going on for several years; yet he had never been known to complain of pain; and the first circumstance which attracted the attention of the parents, was the angular projection of the spinous processes. This patient ultimately died, and on examining the body after death, a large abscess was discovered lying on the surface of the carious vertebræ. In another case, in which the disease was supposed to have been cured, and the patient had not experienced pain for the two or three preceding years, on examining the appearances after death, I found the bodies of the vertebræ still in a state of caries, and an abscess, containing not less than half a pint of matter, connected with them.

The distortion of the spine, which occurs in these cases, is of a peculiar kind. It is bent forward, so as to form an angle projecting posteriorly; and it is evident that this cannot happen without the destruction of the bodies of one or more of the vertebræ.

It is not less evident that the caries must have made considerable progress before this symptom shows itself; and accordingly, we find that it has been preceded by pain, referred to the affected part, during a period which varies from three months to two years, and which is sometimes even longer than this. I have already mentioned that there are exceptions to this general rule; but these are of rare occurrence; and where pain in the early stage of the disease is wanting, there is usually some derangement of the general health, weakness of the extremities, or other symptoms, showing that the patient labours under some kind of disease, without indicating its exact nature and locality.

In general, the curvature is at first only just perceptible, and, by degrees, it becomes more distinct. In one instance, a young woman who had made no previous complaints, immediately after some slight exertion, experienced a sensation as if something had given way in her back, and immediately afterwards lost the use of her lower limbs. This was followed by an angular projection of the spinous process of one of the inferior dorsal vertebræ, and a large abscess, which presented itself on one side of the abdomen: and the patient ultimately died. In another case, after the curvature had taken place, the form of it appeared to vary, in consequence of the diseased vertebræ admitting of being moved to a certain extent on each other; these motions being attended with increased pain, both in the spine and in the lower extremities. The last-mentioned patient ultimately recovered.

Curvature of the spine in the direction forwards may arise from other causes, as a weak condition of the muscles, or a ricketty affection of the bones. In general, in such cases, the curvature occupies the whole spine, which assumes the form of the segment of a circle. At other times, however, it occupies only a portion of the spine, usu-

ally that which is formed by the superior lumbar and inferior dorsal vertebræ; as I have ascertained, not only by examinations during life, but by dissection after death. Here the curvature is always gradual; never angular; and thus it may be distinguished from the curvature arising from caries. Nevertheless, I am satisfied that these different kinds of curvature, arising from different causes, have frequently been confounded with each other; and that some of the cases, which have been published as examples of caries of the spine, and in which it may, at first, be a matter of surprise that so complete and so speedy a cure should have been effected, have in reality been cases of an entirely different malady.\*

I have already mentioned, that there is reason to believe that suppuration takes place at an earlier period in those cases in which the disease has its origin in the cancellous structure of the bones, than where it begins in the intervertebral cartilages. It is remarkable, in some cases of this last description, to how great an extent ulceration will sometimes proceed, without the formation of abscess. I have known as many as three bodies of vertebræ completely destroyed, and the disease to have lasted many years, without matter having been formed: a fortunate circumstance for the patient, as the chance of his recovery is much greater under these, than it would have been under the opposite circumstances. We must not, however, conclude, because no abscess has shown itself, that therefore no abscess exists. Frequently, in examinations after death, we find an abscess in connexion with carious vertebræ, which had never presented itself externally, but which evidently had existed for a considerable length of time.

It is not uncommon to find caries of the vertebræ going on for two or three years before there are any certain indications of the existence of abscess. In one case in which the disease was in the vertebræ of the loins, an abscess presented itself in the groin at the end of eight years; and in another case, in which the disease was situated in the dorsal vertebræ, the interval was still longer—not less than sixteen years. The formation of abscess is usually attended with some derangement of the general health, such as loss of flesh and muscular power; increased frequency of the pulse; a slight access of fever in the evening, followed by perspirations at night; occasionally, but rarely, rigors.

These symptoms may be in some degree relieved by the first bursting of the abscess; but when the daily discharge of matter has continued for some time, they recur in an aggravated form: the patient wastes under the influence of a hectic fever, and some kind of visceral disease supervenes, which proves the immediate cause of death.

The foregoing observations relate to cases of caries of the spine generally; but, to complete the history of the disease, it is necessary to consider the peculiar symptoms which it produces, accordingly as one or another part of the column of the vertebræ is affected by it.

\* Some excellent observations on this subject have been published by Mr. Earle, in the Edinburgh Medical Journal for January, 1815.



When there is caries of the cervical vertebræ, the patient complains, in the first instance, of pain in the neck, which is aggravated by every motion of the head, and which is not unfrequently mistaken for the muscular pains and stiffness connected with what is commonly called a stiff neck from cold. The pain gradually increases, and, according to my experience, is more liable to be severe than when the seat of the disease is in the lower part of the spine. When in the progress of the disease, the spine has become incurvated forward, the angular projection posteriorly is observed to be trifling, except when the lowest or seventh cervical vertebra is implicated in the disease; a difference which is easily explained by the greater length of the spinous process of the latter, as compared with that of the spinous processes of the vertebræ above.

Abscess connected with diseased cervical vertebræ usually presents itself among the muscles on the side of the neck. Occasionally it makes its way forward, forming a tumour, and afterwards breaking in the pharynx. I have seen one case in which the abscess penetrated into the *theca vertebralis*, and the whole of the spinal chord, from its origin to its termination, was bathed in pus. At an early period of the disease, the patient frequently complains of pains in the arms and shoulders. After some time these pains subside, but they are followed by complete paralysis of the upper extremities; while the muscles which derive their nervous influence from the spinal chord below the neck, remain subject to the will. In a still more advanced stage of the disease, the paralysis extends to the muscles of the trunk and of the lower extremities. Then there are pains in the abdomen, which becomes distended and tympanitic; the bowels being at the same time obstinately costive. In all cases, there is pain in the occiput and temples; which is, however, most severe when the disease is situated in the two or three superior vertebræ. Not unfrequently the transverse ligament of the second vertebræ is destroyed, and the consequence is, a dislocation of the odontoid process. Sometimes the dislocation is complete, and the patient, from the pressure made on the spinal chord, expires as suddenly as if the latter had been divided transversely. More frequently it happens that the displacement of the odontoid process is somewhat restrained by the pressure of the dura mater which lies over it. There is then some degree of pressure on the spinal chord, sufficient to excite irritation, but not sufficient to destroy its functions. Under these circumstances, the patient complains of increased pain in the head, followed by convulsions, stupor, dilated pupils, and other symptoms of effusion of fluid on the brain; and on examining the body, after death, we find that such effusion has actually taken place, there being a collection of fluid in the ventricles, or in the base of the cranium, or in both of these situations.

In cases of caries of the superior dorsal vertebræ, independently of the usual pain and tenderness of the affected parts, the patient complains of pain and a sense of constriction of the chest; and when the disease is in the inferior dorsal vertebræ, there is a similar sensation in the epigastrium, pain in the abdomen generally, and a disturbed

state of the functions of the alimentary canal. Occasionally the urine is alkaline, or it contains ulbumen, being voided without its natural transparency, and becoming opaque on exposure to heat, or on the addition of nitric acid. From this last circumstance, and from there being at the same time pain either in or near the region of the kidney, it is sometimes difficult, in the first instance, to determine whether the patient labours under caries of the spine or disease of the kidney.

When the spine is incurvated forward, in consequence of the destruction of the bodies of the dorsal vertebræ, the angular projection behind is more distinct than it ever is where the disease has attacked the vertebræ of the neck or loins. This is to be attributed to the greater length of the spinous processes in this part of the spine, and to the circumstance of their being, in the ordinary position of the parts, inclined more or less downwards. When the curvature is considerable, the thorax becomes at the same time altered in figure. The diameter of the thorax from above downwards, is rendered shorter, while the other diameters are increased; so that, while the figure of the chest is altered, there is but little difference in its actual capacity. If, under these circumstances, an opportunity should occur of examining the appearances after death, we find a change in the position of the viscera corresponding to the altered form of the cavity in which they are contained. This is most apparent in the descending aorta, which is seen taking a spiral, instead of its usual straight course on the fore part of the spine. When the superior dorsal and inferior cervical vertebræ are both implicated in the disease, a large protuberance presents itself between the superior angles of the scapulæ, and the neck appears shortened, as if it had descended or sunk between the shoulders.

As the disease advances, the patient, in some instances, complains of pains, which are referred to one groin and hip, such as may lead to the suspicion that there is disease in the hip-joint; and, in fact, it is a very common error (and one into which even surgeons of great experience are liable to fall,) to regard the symptoms of caries of the middle and inferior dorsal vertebræ as indicating incipient caries of the hip. Afterwards pains and a sense of constriction, are felt in the legs and thighs. Then the muscles are found to be not properly under the dominion of the will, so that the patient occasionally loses a step, or trips in walking. This is probably followed by a complete loss of voluntary power. In some cases there is an entire paralysis; the muscles of the lower extremities never acting under any circumstances: while in other cases, although they do not act under the influence of volition, they are subject to involuntary contractions or spasms.

Occasionally the loss of voluntary power over the muscles is attended with a total loss of sensibility; but more frequently while the former function of the nerves is destroyed, the latter remains either little or not at all impaired.

Paralysis of the bladder, and incontinence of the urine and fæces, sometimes occur in combination of the paralysis of the lower limbs, forming a most distressing addition to the patient's other calamities.



A considerable time generally elapses before abscess connected with caries of the dorsal vertebræ presents itself externally. Sometimes it shows itself on a posterior or lateral, or even on the anterior part of the chest, having penetrated through one of the intervertebral spaces. More commonly it makes its way downwards through the posterior mediastinum, and behind the small muscle of the diaphragm; and then, taking the course of the *psoas* muscle, passes behind the crural arch, and shows itself in the anterior and upper part of the thigh. It is not uncommon for the abscess to form a large tumour on one side of the abdomen, occupying the whole, or a great part, of the space between the false ribs and the groin, pushing the viscera to the opposite side, and, at last, making its way to the surface, either through the abdominal muscles, or under Poupart's ligaments. But a great length of time may elapse before it reaches this termination. I have known such an abscess to remain neither increasing nor diminishing in size, nor being materially changed in its situation, for several successive years: in some instances being a soft and compressible tumour, in which the fluctuation of matter was distinctly perceptible; in others, appearing like an irregular mass of solid substance, closely attached to the posterior and lateral parts of the spine. Inexperienced surgeons not unfrequently mistake an abscess under the circumstances which I have just described, for an encysted tumour, or some other morbid growth.

When the lumbar vertebræ are affected with caries, the patient usually complains of pain in the region of the loins; which is aggravated by stooping, turning the body suddenly round, or by percussion. Sometimes the pain is confined to the vertebræ themselves; while at other times it extends forwards, in the direction of the lumbar nerves, to the sides of the abdomen and the crista of the ilium.

When abscess is formed, it usually either descends in the direction of the *psoas* muscle, and presents itself behind the crural arch in the upper and anterior part of the thigh, or otherwise makes its way backwards on the outer edge of the *quadratus lumborum* and *sacro-lumbalis* muscles, showing itself on one side of the loins. In some rare cases, it takes the course of the spermatic chord, and forms a tumour projecting through the abdominal ring, such as a superficial observer might easily mistake for a hernia; or, it descends into the pelvis, and afterwards into the posterior part of the thigh, following the direction of the sciatic nerve, through the sacro-sciatic notch of the pelvis. Occasionally it reaches this last-mentioned situation in another way. I have known an abscess to have descended from the loins, and presented itself as a tumour in the groin. Suddenly the tumour has disappeared, and the patient has been led to entertain hopes of a speedy recovery. But these have been soon disappointed, in consequence of the discovery of a large collection of matter in the posterior part of the limb, behind the little trochanter of the thigh. In a case of this kind, in which I had the opportunity of examining the morbid appearances after death, I found that the abscess had taken the course of the common tendon of the *psoas magnus* and *iliacus internus* muscles,

to their insertion into the little trochanter, afterwards extending farther backward, over the inferior edge of the *quadratus femoris*.

I may take this opportunity of observing, that it is by no means uncommon, whatever part of the spine may be the seat of caries, to find an abscess thus altering its course, disappearing in one place, and sometime afterwards showing itself in another: and this seems to afford a reasonable explanation of some of those cases, in which it has been supposed that an abscess has been suddenly removed by absorption.

It very rarely happens that this disease, when confined to the loins, proceeds so far as to occasion any perceptible alteration in the figure of the spine: and this peculiarity is easily explained, by the greater magnitude of the bodies of the lumbar, as compared with those of the cervical or dorsal vertebræ, in consequence of which, the former are not destroyed by the same degree of caries which would be sufficient for the destruction of the latter.

The same circumstance will also, in great measure, account for another peculiarity of this disease, when it affects the lower portion of the spine; namely, the absence, in the majority of cases, of pains, muscular spasms, paralysis, and loss of sensibility in the lower limbs. In fact, in these cases it seldom happens that the caries extends so far as to reach the *theca vertebralis*. In one case, in which the patient had complained of numbness of the legs and thighs, I found, on dissection, that the *theca vertebralis* was in no part exposed; but that there was a large abscess on each side surrounding the origin of the anterior crural and obturator nerves, and thus explaining the diminished sensibility of the parts to which they were distributed.

In systematic works on surgery, the lumbar or psoas abscess is usually described as if it were (in some instances at least) a specific or primary disease, having its origin in the psoas muscle. But, according to all the experience which I have had in these cases, this is altogether a mistaken view of the subject. I cannot say that such an abscess never takes place in the loins; but I certainly believe that it is of very rare occurrence. In examining cases of lumbar abscess after death, I have always found caries of the vertebræ, in which the abscess has manifestly originated. In general the disease of the vertebræ has been so obvious, that it could not have been overlooked by the most superficial observer; but, in some instances, the real nature of the disease has not been detected until after a careful dissection; in one instance, on examining the body of a patient who died in St. George's Hospital with an extensive suppuration in the loins, the soft parts having been entirely removed, not the smallest appearance of disease presented itself in the lumbar vertebræ, and I conceived that I had at last met with a case of genuine psoas abscess; when, almost accidentally, a small opening was discovered on one side of the spine, in a part which had been covered by one of the attachments of the psoas muscle, just large enough to admit a common probe, and forming a communication between the cavity of the abscess, and one of the intervertebral spaces. On a farther dissection, it was



ascertained that the intervertebral cartilage had been completely destroyed by ulceration, except at its circumference, and that the opposite surfaces of the bodies of the two contiguous vertebræ were extensively carious.

---

### SECTION III.

#### OF THE TREATMENT OF CARIES OF THE SPINE.

THERE are few cases of caries of the spine in which it is not advisable to have recourse to some kind of medical treatment, for the purpose either of correcting that state of the system on which the local disease depends, or of counteracting the ill effects which the latter has produced on the patient's general health. On this subject, however, it will be sufficient for me to refer to the observations which I have already offered in speaking of the treatment of the disease of the other articulations, in the concluding part of each of the two preceding chapters.

Of those remedies which may be supposed to exercise a more direct influence over the disease, the two which have been principally recommended are; first, a state of absolute rest in the horizontal position, continued during a considerable period of time; and, secondly, the establishment of issues made with caustic, or the actual cautery in the neighbourhood of the affected vertebræ.

I suppose that no one will be bold enough to deny the prudence, and that few will deny the absolute necessity, of the first of these remedies. While the patient is in the erect posture, and the weight of the head and other superincumbent parts are pressing on the ulcerated surfaces, and while these are liable, in the various motions of the body, to a constant (however trifling) friction, it is not probable that the progress of ulceration can be checked, or that suppuration can be prevented. From the first moment in which the nature of the case is clearly indicated, the patient should abandon his usual habits, and be confined altogether to his bed or couch. In some instances, in which severe pain in the vertebræ is among the early symptoms of the disease, the patient will submit to the privations which are thus imposed upon him with sufficient willingness; while in others, nothing but a candid exposition of the ill consequences which may otherwise arise, will overcome his reluctance to do so. The invalid bedstead, contrived by Mr. Earle, and which I have formerly mentioned, will, in ordinary cases, afford the most convenient means of conducting this part of the treatment. The use of it is attended with this great advantage, that the patient may be laid on his back, and the trunk and thighs may be, from time to time, and within moderate limits, elevated or depressed, so that their relative position may be varied without the smallest move-

ment being communicated to the carious vertebræ. Where, however, the disease has been going on for a long time, and there exists already a considerable angular curvature of the spine, it is desirable that the patient should recline on his side rather than on his back; or if he finds this in any way inconvenient or disagreeable, he should lie, not on an absolutely flat surface, but supported by cushions and pillows, so that the position in which he is placed may have no tendency to restore the spine to its original figure. In the management of these cases, it is important that we should always bear in mind, that, without undue interference on the part of the surgeon, the carious or ulcerated surface of the vertebræ above will come in contact with that of the vertebræ below; and that it is to the union which takes place between them under these circumstances, at first by soft substance, and afterwards by bony ankylosis, that we are to look for the patient's recovery. In artificially straightening or elongating the incurvated spine, we necessarily disturb this curative process, and therefore all attempts to do so, whether by means of machinery, or by laying the patient in the supine posture on a horizontal board, are to be scrupulously avoided.

The recumbent position does not constitute the only means which we have it in our power to employ for the purpose of maintaining the diseased spine in a state of perfect repose. When the disease is situated in the dorsal or lumbar vertebræ, the patient may be provided with a bandage, including some stripes of whalebone, and somewhat resembling the stays worn by females, but extending as low as the symphises of the pubes, the os sacrum, and the great trochanter, and as high as the neck. This will operate like splints, fixing the pelvis and thorax in the same relative position. A less efficient support may be given to the cervical vertebræ by means of a cushion adapted to the shape of the lateral and posterior parts of the neck, and extending from the upper part of the back to the occiput.

Concerning the advantage to be derived from the establishment of issues, there may probably be a greater diversity of opinion than concerning that which is to be obtained from rest and the recumbent posture; and I am well aware that some experienced practitioners of the present day estimate their value at a low rate. It is not, however, easy to suppose that Mr. Pott and others, whose opinion carries with it much authority, should have been mistaken so far as to persevere, during a series of years, in the employment of a remedy which was actually inefficacious. If issues are of service, where the cartilages of the hip or knee are ulcerated, analogy would lead us to expect, that they may be useful also, where a corresponding disease has taken place in the joints of the vertebræ; and my own experience has certainly tended to confirm this expectation. I have known instances of patients who have been under precisely the same circumstances with respect to rest, and whose symptoms have been manifestly and considerably relieved, either immediately or in a short time after the issues had been made; and, where the caustic has been occasionally applied to the surface of the issue for the purpose of keeping it open, other patients have informed me, that "they have uniformly found



themselves better in a few hours after each application." At the same time it must be acknowledged that some cases occur in which the caustic issues seem to be productive of little or no benefit. Probably it is with diseases of the vertebral as it is with those of the other joints, and issues may be of little or no efficacy where the ulceration of the cartilages is preceded by a scrofulous disease of the cancellous structure of the bones; and they may be productive of great benefit where it takes place under other circumstances. Nor, if my observations on the subject be well-founded, is this to be regarded as a merely theoretical opinion. I have repeatedly known the greatest relief to follow the establishment of issues, where the patient has suffered severe pain in the situation of the carious vertebræ, presenting at the same time no distinct indications of a scrofulous diathesis; while, in young persons, with fair complexions, and dilated pupils, in whom the disease has proceeded with little or no pain, they have appeared to be either inefficacious, or actually injurious. It appears to me, also, that in caries of the spine, as well as in that of other joints, issues are to be employed only in the early stage of the disease, with a view to prevent suppuration, and that they are of no service after abscess has actually formed.

An important question remains: how long is the use of these remedies to be continued? It is often difficult to answer such an inquiry even in an individual case; and its much more so to lay down a general rule on the subject. The issues may be healed on the first clear evidence of the formation of abscess; otherwise, if they occasion little or no inconvenience, they may be kept open for one or two years. With respect to the recumbent position, if there be a reason for having recourse to it, there is also a sufficient reason for it not being abandoned in less than six or seven months, even when the disease is in its earliest stage; and, in the great majority of cases, the period should be extended to a year, and sometimes to a year and a half.

In the first instance, the surgeon usually finds it difficult to persuade the patient to continue this part of the treatment for a sufficient length of time after the removal of the more urgent symptoms. Afterwards, however, he often has to encounter a difficulty of an opposite kind. This happens especially among young females, who become at last so habituated to their couch, and the peculiar mode of life connected with it, that they can scarcely be persuaded to make the necessary effort to sit up and move about, even after every reason for not doing so has vanished. I know an instance of a lady, who, under these circumstances, has preserved the horizontal position for fourteen years, and in whom nearly all the joints of the lower extremities, in which no actual disease ever existed, have, from mere want of exercise, become firmly ankylosed; so that it is evident that nothing which can now be done will enable her to regain the use of the limbs, or even to sit up.

With respect to the treatment of abscesses connected with caries of the spine, I am not aware of any circumstances in which it should

differ from that of abscesses connected with other joints affected by the same disease. The patient should not venture to take exercise, nor even to quit the recumbent posture until the abscesses are healed. This is to be regarded as the general rule; from which, however, on a very few occasions, it may be right to deviate. I was consulted by a gentleman who was at that time thirty-five years of age, and who had laboured under well-marked symptoms of caries of the spine, since he was three years old. There was considerable curvature in the direction forward, with an angular projection of the spinous processes of the middle dorsal vertebræ posteriorly; and there were two sinuses, discharging pus communicating with the carious vertebræ, which had existed for nearly thirty years. Nevertheless, the patient had been able to take violent exercise in hunting and shooting, and other ways, and his general health had been excellent. In fact, he had suffered no material inconvenience from his complaint, except that he once lost the use of his lower limbs; recovering it, however, completely at the expiration of three months, and after the application of blisters to the back.

---

## CHAPTER VII.

### ON TUMOURS AND LOOSE CARTILAGES IN THE CAVITIES OF JOINTS.

THE loose cartilaginous substances, which are sometimes found in the joints, have been so frequently described by writers, that I can have but a few observations to offer respecting them. I believe it is generally supposed that these loose bodies have their origin in coagulated lymph, which has been effused from inflammation of the inner surface of the synovial membrane, and which has afterwards become vascular. In the majority of cases, however, which I have met with, no symptoms of inflammation preceded their formation; and hence it is probable that, in some instances, they are generated, like other tumours, in consequence of some morbid action of a different nature.

They appear to be situated originally either on the external surface, or in the substance, of the synovial membrane; since, before they have become detached, a thin layer of the latter may be traced to be reflected over them.

My own experience is much in favour of the removal of these loose cartilages by an incision of the joint, provided that this be done in a cautious and prudent manner. The patient should be kept in a state of the most perfect quietude for two or three days preceding, and for several days after, the operation. The cartilage having been well fixed, the different parts over it should be slowly and separately divided until it is exposed. The wound of the synovial membrane



may be dilated by means of a probe-pointed bistoury, until it is of sufficient size to allow of the cartilage being extracted with a tenaculum; and the cut edges of the skin should be instantly replaced in contact with each other, and secured by means of adhesive plaster.

I attended a gentleman who laboured under this troublesome disease, and in whom the loose bodies not unfrequently slipped between the articulating surfaces of the knee, occasioning an almost immediate swelling of the joint, with the most excruciating pain and tenderness, and much symptomatic fever. In one instance, more than a month elapsed before these symptoms had subsided. These circumstances are noticed, because they prove that, in this patient, there was a considerable disposition to inflammation; yet, by attending to the precautions above mentioned, as many as five loose cartilages were extracted by three different operations, without the slightest inconvenience arising from any one of them.

I have seen two cases, in which the loose bodies were of a different nature, and had a different origin from those which are commonly met with. It occasionally happens, that a bony ridge is formed, like small exostosis, round the margin of the cartilages of the joint. In the two cases to which I allude, this preternatural growth of bone had taken place, and in consequence of the motion of the parts on each other, portions of it had been broken off, and lay loose in the cavity of the joint.

---

In the museum of St. George's Hospital, there is a specimen of a knee-joint, the inner surface of which is lined by a great number of small pendulous excrescences, connected with the synovial membrane; having a smooth external surface, and bearing an apparent resemblance to the *appendices epiploicæ* of the great intestine, though not containing adipose substance. The preparation was purchased at the sale of the late Mr. Heaviside's anatomical collection; and nothing is known of the history of the patient from whom it was taken. We have another somewhat similar specimen; and, in the last case, there is reason to believe that the excrescences were the result of long-continued inflammation of the synovial membrane. A third example of the same disease is in Sir Charles Bell's museum, which was formerly in Great Windmill Street. The late Mr. Shaw informed me that, in this case, the joint contained a considerable quantity of whey-like fluid; but he was not able to give me any farther information respecting it.

Occasionally, tumours of a different kind are formed on the inner surface of the synovial membrane, and attain a considerable magnitude.

#### CASE LXVIII.

Morris Sudbury, twenty-one years of age, was admitted into St. George's Hospital, on the 4th of October, 1820.

He had swelling, and complained of pain and tenderness, in one knee. He was kept in bed: the joint was bathed with a cold lotion. Afterwards blisters were applied. The swelling subsided, but the joint continued weak and painful.

On the 11th of December, for the first time, a tumour was discovered evidently within the cavity of the knee-joint, situated on the edge of the patella, over the external condyle of the femur. The tumour appeared like a loose cartilage, of about the size and form of an almond. When the man attempted to walk, in certain motions of the limb, it slipped into the cavity of the joint, producing considerable distress, and making him lame. An attempt was made to confine it by means of bandages, but without success.

On the 5th of January, 1821, Mr. Ewbank made an incision through the skin, fascia, and synovial membrane, so as to expose the tumour. It was found to be not cartilaginous, but of a gristly structure. It was of about the length of an almond, but rather broader; and it was attached by one extremity to the synovial membrane, near the edge of the patella. This attachment was cut through, and the tumour was removed. The edges of the wound were brought into contact, and united by the first intention. Some inflammation of the joint followed, but was subdued without much difficulty. When the patient began to walk, he found himself to have been much relieved by the operation.

Six weeks afterwards, however, a tumour was discovered in the knee of a smaller size than that which had been removed, but occupying precisely the same situation; so that there was a sufficient reason to believe that it had grown from the same basis. This tumour could be pressed into the joint by the fingers, but did not slip into it spontaneously in walking; and therefore, at the time when the man left the hospital, he did not suffer any inconvenience from it.

#### CASE LXIX.

Mr. H., a young man, consulted me on the 25th of April, 1822, labouring under the following symptoms:—In certain motions of the right knee a tumour presented itself on the inside of the patella, which had been supposed to be, and had the appearance of being, a loose cartilage of a large size. He said that, occasionally in walking, this substance slipped between the articulating surfaces. The accident always produced considerable pain at the time, and inflammation of the synovial membrane afterwards, which in one instance confined him to his bed for several weeks. He said, farther, that these symptoms had been gradually coming on for two or three years; that he had worn bandages, without experiencing any good effect; and that, as the disease interfered very much with his comfort and occupations, he was desirous of submitting to any operation which afforded him a prospect of relief.

On the 28th of April, after he had remained for one or two days in



a state of perfect quietude, I carefully made an incision on the tumour, which had been previously fixed by the finger of an assistant over the inner condyle of the femur. When it was thus exposed, I found the tumour to be, not a loose cartilage, but of a fleshy structure; and that it was connected to the synovial membrane below the patella, by a broad adhesion. Having divided this adhesion, I removed the tumour. The edges of the wound were brought together by means of a suture, which was passed through the integuments, and stripes of adhesive plaster. The patient was kept in bed, and the limb was supported by a splint, to which it was secured by bandages in such a way as to render the joint quite incapable of motion.

About twenty-two hours after the operation, symptoms of violent inflammation began to shew themselves. There was almost insupportable pain; the joint became rapidly swollen; the pulse rose to 90 in a minute, and was hard and strong. By means of very active antiphlogistic treatment, however, the inflammation subsided, without producing any bad consequences. On the 27th of June he was able to undertake a journey to a considerable distance from London; at which time the knee was neither swollen nor painful, but it was still incapable of perfect flexion and extension. Since then the patient has recovered the perfect use of the joint.

On examining more accurately the tumour which had been removed in this case, it was found to be about two inches and a half in length, and one inch and a half in breadth, and somewhat less than half an inch in thickness in the thickest part: convex on one surface, and somewhat flattened on the other. It was of a firm, fleshy structure. The general appearance of it a good deal resembled that of the coagulum which is found in the sac of aneurism; but it was not laminated: it had a smooth membranous surface; and it was manifestly organized, as vessels might be distinctly traced ramifying through its substance.\*

In both of these cases the operation was resorted to under the impression that the substance contained in the cavity of the joint was one of the loose cartilages, of which I have spoken in the beginning of this chapter. If I had been acquainted with the real nature of the tumour in the last case, I should certainly have been less inclined to attempt its extirpation; and the violence of the inflammation which ensued must form an additional reason for hesitation in any future case of the same kind.

But the question will arise, how are such firm fleshy tumours, which

\* A remarkable circumstance occurred in the progress of this case. The wound made in the operation united by the first intention; but the joint being much distended with synovia, the adhesion gave way; so that the wound was re-opened on the ninth or tenth day, and the synovia escaped in a small but constant stream. The discharge of synovia continued; but the joint being carefully retained in a state of the most perfect quietude, supported on a splint, no additional inflammation of it was the consequence. At last the flow of synovia ceased; the wound gradually closed; and in the course of three or four weeks it was firmly cicatrised. The same thing happened, under my observation, in another case, after the removal of loose cartilage from the knee.

are capable of altering their position in the cavity of a joint, and which produce symptoms similar to those which are produced by loose cartilages, to be distinguished from the latter? Perhaps, being aware of the possibility of the existence of a tumour of this description, we may, by a very careful examination, be enabled to ascertain, even through the superjacent soft parts, that it has not the same degree of hardness with cartilage itself. I am not at present acquainted with any other circumstances on which our diagnosis can be founded. Fortunately, however, it happens, that while loose cartilages in joints are not uncommon, such fleshy tumours as I have just described are of very rare occurrence.

## CHAPTER VIII.

### ON MALIGNANT DISEASES OF THE JOINTS.

IT is well known to surgeons that the bones are liable to those morbid growths and alterations of structure, which, from the peculiar circumstances which mark their progress, are usually denominated malignant diseases.

In the cases which have fallen under my observation, carcinoma of the bones has never occurred as a primary disease, but has always been preceded by carcinoma of the breast or some other glandular organ. The existence of the disease in the bones has been indicated by pains, sometimes slight, at other times most severe, resembling those of deep-seated rheumatism, but not yielding to the use of the remedies by which rheumatic pains are usually influenced. In these cases, the bones themselves become unnaturally brittle, and are so easily broken, that I have more than once known a fracture of the femur to be produced by the patient accidentally turning herself in bed; and, in one instance, a fracture of the clavicle took place on the patient making some slight effort in raising her arm.

Of the two following cases the first affords an example of carcinomatous disease affecting the head of the femur, and producing symptoms somewhat corresponding to those of disease in the hip-joint; while the second displays the symptoms which it produces when it attacks the vertebræ, and which are such as might lead a superficial observer to mistake the case for one of caries of the spine.

#### CASE LXX.

A lady between sixty and seventy years of age, in the year 1817, underwent the operation for the removal of a scirrhus breast. Some time afterwards a hard tumour showed itself in the cicatrix; and, about



the same period, she began to complain of pain in the left hip and thigh. On the 7th of November, 1820, I saw her in consultation with Mr. Smith, surgeon, of Richmond, by whom she was attended. At this time a large scirrhus tumour occupied the situation of the breast which had been amputated. She complained of pain in the hip, thigh, and knee, which was aggravated by pressure: the pain was very severe, keeping her awake at night, except when she was under the influence of a very large dose of opium. There was a cluster of enlarged glands in the groin, making a hard, and somewhat moveable tumour. On the 18th of December following, the patient died; and the body was examined by Mr. Smith and myself on the following day.

We found that the thigh-bone had been broken transversely about two inches below the neck; and it was evident, from the appearance of the fracture, that it had taken place either immediately before or after death; and, in either case, it must have been the result of some very trifling accident. The whole of the superior extremity of the thigh-bone was softer and more brittle than natural: but this morbid change was less distinct below than above the fracture, and it was more distinct in that part of the head of the bone which was contiguous to the cartilage. On making a section of the head and neck of the bone, the earthy matter was found to be very deficient, and a cartilaginous or gristly substance was seen blended with the bony structure. In several places there were spots of increased vascularity with a deposition of some cheesy matter in the center. The cartilages were not ulcerated, and there was no effusion of pus, lymph, or serum into the cavity of the joint. The enlarged inguinal glands had the structure of scirrhus; and there was a similar mass of scirrhus lymphatic glands in the pelvis, immediately above the crural arch.

### CASE LXXI.

A lady about thirty-eight years of age consulted me, in the spring of 1832, on account of a scirrhus disease of one breast. There was not a distinct scirrhus tumour imbedded in the substance of the breast, but a conversion of the gland itself into the scirrhus structure. The skin covering the breast was thickened, and manifestly contaminated by the disease.

From this time I saw her occasionally; the disease in the breast making little or no apparent progress.

During the night of the 10th of February, 1833, she suddenly became paralytic in the whole of the lower part of the person. She not only lost the power of using her lower limbs, but that of voiding her urine also; and it became necessary to empty the bladder by means of a catheter.

The loss of muscular power was attended with a loss of sensibility as high as the navel and lowest dorsal vertebræ. When the catheter was introduced into the bladder she was not sensible of its introduction.

In the beginning of March the lower limbs became affected with involuntary convulsive movements which were unattended by pain, but of which the patient complained that it was disagreeable for her to see them.

When the paralysis first took place the urine was clear, and otherwise in a natural state, afterwards it became ammoniacal, and offensive to the smell, depositing a thick mucus, with traces of phosphate of lime in it.

On the 9th of April, 1833, the patient died.

The body was examined by Mr. Cutler, who found the whole of the gland of the breast to have assumed a scirrhus structure.

Several of the dorsal vertebræ were converted into a substance possessing considerable vascularity, of a gristly consistence; some of them containing no earthy matter whatever, so that they could be cut with a knife. Altogether, the alteration in the condition of the vertebræ seemed to be very similar to that which had taken place in the head of the femur, in the case which was last described, except that being more complete, it might be supposed to indicate a more advanced stage of the disease.

The whole of the lower portion of the *theca vertebralis* was filled with a serous fluid.

There was a deposit of earthy matter in the upper part of each lung; and about four ounces of serous fluid were contained in the cavity of the right pleura.

The kidneys were of a dark colour, and highly vascular.

The mucous membrane of the bladder bore marks of considerable inflammation. The ureters pelves, and infundibula of the kidneys were also inflamed, and in some parts lined with coagulated lymph. They were considerably dilated, and contained a putrid mixture of urine and mucus.

The bones are much more liable to be affected by fungus hæmatodes than they are by carcinoma; and the former frequently occurs in them as a primary disease, that is, not having previously shown itself in any other part of the body. Several cases have fallen under my observation, in which a tumour of this description has had its origin in one of the bones of a joint: and it is evident that such a tumour, in its progress affecting the contiguous parts, must, by degrees, render the joint useless, and terminate in its complete destruction.

In these cases the patient first complains of a slight degree of pain in the affected part, which is somewhat aggravated by exercise. Some time afterwards the bone is observed to be slightly enlarged. As the tumour increases it is found to be elastic in some parts, hard in others. For a considerable time it does not interfere with the functions of the joint; which, however, afterwards becomes limited in its motions, and, ultimately, completely fixed in one position. I have known only a single case in which the patient did not submit to amputation before the disease had reached its most advanced stage; and here the skin became ulcerated, and a large ill-conditioned sore was the consequence.



Amputation is, indeed, the only remedy which the surgeon has to offer; and it is unnecessary to say, that, in all cases of fungus hæmatodes, even this is of doubtful efficacy. In the first of the two following cases I had, however, the satisfaction of learning that the patient continued well at the end of more than four years after the operation.

## CASE LXXII.

Mr. O., twenty-five years of age, in January, 1828, first experienced a sensation of weakness in the right knee, with a slight pain, after walking a short distance. The symptoms continued; and, in the course of two or three months, he observed a small tumour over the external condyle. He remained in this state, the tumour not increasing in size, through the spring, and the greater part of the summer.

In the middle of the following August, he one day went through a great deal of fatigue in grouse-shooting; after which the tumour began to increase in size.

On the 1st of September, in walking over a field, his foot slipped into a hollow in the ground. This caused great pain in the knee, and he was under the necessity of riding home. After this accident the tumour progressively increased in size.

On the 25th of January, 1829, he came to London, and placed himself under the care of Mr. Griffiths, of Pimlico, and myself. At this time, there was a very considerable enlargement of the whole of the upper part of the knee-joint, so that it was four inches in circumference larger than the corresponding part of the opposite limb. The tumour was soft and elastic, occupying the situations of both condyles of the femur, but being more especially prominent in that of the outer condyle. The head of the tibia and the patella did not seem to be implicated in the disease, and the joint retained nearly its natural degree of mobility.

For some time after I was consulted the tumour remained nearly stationary: then it began to increase; and as no remedy seemed to have any dominion over the disease, a consultation was held with Sir Astley Cooper, in which it was determined that the limb should be removed by amputation. The operation was accordingly performed on the 6th of July, 1829.

On examining the amputated limb, the femur was found to terminate abruptly about five inches above the knee-joint. In place of the condyles and lower part of the shaft of that bone, there was a large tumour, of an irregular form, the structure of which bore a nearer resemblance to that of fungus hæmatodes than of any other morbid growth. The cartilage which had covered the surface of the condyles of the femur was seen expanded over the lower part of the tumour; being every where thinner than natural, but no where in a state of ulceration. In some parts it had contracted adhesions to the cartilage covering the head of the tibia.

In other parts the tumour was covered by some thin remains of the periosteum, and a layer of thickened cellular membrane.

### CASE LXXIII.

William Williamson, fourteen years of age, was admitted into St. George's Hospital, on the 21st of September, 1831, on account of a tumour on the inside of the right knee, extending from about two inches below the tubercle of the tibia upward, over the inner condyle of the femur, as high as one-fourth of that bone, and backward so as to occupy the ham. The boundaries of the tumour were distinctly defined. It seemed to have had its origin in the head of the tibia, and the tendons of the inner ham-string were seen stretched over its surface at the upper part, and apparently terminating in it below. The circumference of the knee-joint, in the situation of the tumour, was eighteen inches. The skin covering the tumour was tense and shining, with large tortuous veins ramifying in it.

On examining it with the hand, some parts of the tumour were found to be hard, while others were soft and elastic.

The joint admitted of some degree of motion, but was kept in the half-bent position. The tibia appeared to be the only bone implicated in the disease.

The patient had, generally, had good health; and seemed to be free from all other disease at the time of his being admitted into the hospital.

He stated that, in April, 1831, he first experienced a slight degree of pain in the head of the tibia, especially in walking. About six weeks afterwards he observed a slight enlargement of the bone, which from that time gradually increased.

September 29. The limb was amputated.

On examining the knee-joint, the tumour was found to be wholly formed by an expansion of the head of the tibia. The upper and inner part of the tumour was composed, partly of cysts containing a bloody fluid, and partly of organized medullary substance. In other parts there was a mass of bony and cartilaginous substance, disposed in fibres, which seemed to proceed from what had been the surface of the original bone, and presented a somewhat radiated appearance. The other bones, the cartilages, and the soft parts composing the joint, were in a natural state.



## CHAPTER IX.

## ON SOME OTHER DISEASES OF THE JOINTS.

In the present chapter it is proposed to notice some other diseases of the joints, which have not been described in the former pages.

1. In those numerous cases in which acute inflammation attacks the shaft of a cylindrical bone and the periosteum covering it, the disease is usually limited by the epiphyses; so that, notwithstanding the extensive abscesses and exfoliations which frequently ensue, the neighbouring joints are not affected by it.

A few instances, however, occur, in which acute inflammation attacks the epiphysis itself, terminating also in more or less extensive exfoliation. Sometimes we find nearly the whole of the epiphysis deprived of its vitality; at other times only one small portion of it, or several small portions in different places.

In some of these cases, the exact nature of the disease is sufficiently obvious; but in others, where the exfoliations are of a very small size, it is difficult, or impossible, to form an exact diagnosis. This is, however, of the less importance, as, under all circumstances, such a disease must terminate in the complete destruction of the joint; so that there is no remedy but amputation.

2. Chronic inflammation, producing a chronic enlargement of the epiphysis, is a not unfrequent occurrence, and is liable to be mistaken for disease in the joint itself; the more so, as inflammation of the synovial membrane sometimes occurs as a secondary disease. The patient, under these circumstances, may derive benefit from the use of sarsaparilla, mercury, the hydriodate of potash, mezereon, or from the application of blisters; in short, from any of those remedies which are found to be useful where nodes are formed in other parts of the bones.

Occasionally chronic inflammation of an epiphysis terminates in the formation of an abscess in the centre of the bone, but contiguous to the joint. An abscess of this kind is attended with an extraordinary degree of suffering, such as not only justifies amputation, but induces the patient cheerfully to submit to the operation. Under certain circumstances, however, he may obtain the desired relief without the loss of the limb. The following cases will serve to illustrate both the history and the treatment of these cases, and will be found interesting to the practical surgeon.\*

\* These cases formed the subject of a paper which I formerly communicated to the Medico-Chirurgical Society, and which has been published in the 17th volume of their Transactions.

## CASE LXXIV.

Mr. P., about twenty-four years of age, consulted me in October, 1824, under the following circumstances:—

There was a considerable enlargement of the lower extremity of the right tibia, extending to the distance of two or three inches from the ankle joint. The integuments at this part were tense, and they adhered closely to the surface of the bone.

The patient complained of a constant pain, referred to the enlarged bone and neighbouring parts. The pain was always sufficiently distressing; but he was also liable to more severe paroxysms, in which his sufferings were described as most excruciating. These paroxysms recurred at irregular intervals, confining him to his room for many successive days, and being attended with a considerable degree of constitutional disturbance. Mr. P. described the disease as having existed more than twelve years, and as having rendered his life miserable during the whole of that period. In the course of this time he had been under the care of various surgeons, and various modes of treatment had been resorted to without any permanent advantage. The remedies, which I prescribed for him, were equally inefficacious. Finding himself without any prospect of being relieved by other means, he made up his mind to lose the limb by amputation; and Mr. Travers having seen him with me in consultation, and having concurred in the opinion that this was the best course which could be pursued, the operation was performed accordingly.\*

On examining the amputated limb, it was found that a quantity of new bone had been deposited on the surface of the lower extremity of the tibia. This deposition of new bone was manifestly the result of inflammation of the periosteum at some former period. It was not less than one-third of an inch in thickness; and, when the tibia was divided longitudinally with a saw, the line at which

\* It is right that I should state briefly the termination of the case; especially as the circumstances attending it were probably connected with a peculiar condition of the nervous system, occasioned by the long continuance of the local disease. Unfortunately I preserved no notes of this part of the case at the time; but I have no doubt that my recollection is accurate as to the following particulars. The patient bore the operation with the utmost fortitude, but immediately afterwards he was observed to become exceedingly irritable, restless, and too much disposed to talk. Unfortunately, in the evening, there was hemorrhage from the stump: which ceased, however, on the removal of the dressings and coagulum. During the night he had no sleep; and on the following day he was restless and incessantly talking, with a rapid pulse. These symptoms became aggravated. There was no disposition to sleep, and the pulse became so rapid that it could scarcely be counted. Until the third or fourth day the tongue remained clean and moist. After this period it became dry, and somewhat brown, and there was constant delirium. The pupils were widely dilated, and the sensibility of the retina was totally destroyed; the glare of a candle not being perceptible even when held close to the eye. Death took place on the fifth day after the operation. No morbid appearances were observed in the post mortem examination.



the new and old bone were united with each other was distinctly to be seen.

The whole of the lower extremity of the tibia was harder and more compact than under ordinary circumstances, in consequence, as it appeared, of some deposit of bone in the cancellous structure; and in its centre, about one-third of an inch above the ankle, there was a cavity of the size of an ordinary walnut, filled with a dark-coloured pus. The bone immediately surrounding this cavity was distinguished from that in the neighbourhood by its being of a whiter colour, and of a still harder texture, and the inner surface of the cavity presented an appearance of great vascularity. The ankle-joint was free from disease.

It seems highly probable that, if the exact nature of the disease had been understood, and the bone had been perforated with a trephine, so as to allow the pus collected in its interior to escape, a cure would have been effected, without the loss of the limb, and with little or no danger to the patient's life. Such, at least, was the opinion which the circumstances of the case led me to form at the time; and I bore them in my mind, in the expectation that, at some future period, I might have the opportunity of acting on the knowledge which they afforded me, for the benefit of another patient.

#### CASE LXXV.

Mr. B., at that time twenty-three years of age, consulted me in the beginning of February, 1826. There was considerable enlargement of the right tibia, beginning immediately below the knee, and extending downwards, so as to occupy about one-third of the length of the bone.

Mr. B. complained of excessive pain, which disturbed his rest at night, and some parts of the swelling were tender to the touch. The knee itself was not swollen, and its motions were perfect.

He said that the disease had begun more than ten years ago, with a slight enlargement and pain in the upper extremity of the tibia; and that these symptoms had gradually increased up to the time of my being consulted. Various remedies had been employed, from which, however, he had derived little or no advantage.

Having inquired into the circumstances of the case, I was led to regard it as one of chronic periostitis; and I adopted the following method of treatment:—An incision was made longitudinally on the anterior and inner part of the tibia; extending from the knee four inches downwards, and penetrating through the periosteum into the substance of the bone. The periosteum was found considerably thickened, and the new bone, which had been deposited beneath, was soft and vascular. The immediate effect of the operation was to relieve the pain which the patient suffered, so that he slept well on the next and every succeeding night. After this I prescribed for him a strong decoction of sarsaparilla. The wound gradually healed; and

it was for some time supposed that a perfect cure had been accomplished. The enlargement of the upper extremity of the tibia, however, never entirely subsided; and in August, 1827, pain was once more experienced in it. At first the pain was trifling, but it gradually increased; and when I was again consulted, in January, 1828, Mr. B. was unable to walk about, and quite unfit for his usual occupations. At this period the pain was constant, but more severe at one time than at another, often preventing sleep during several successive nights. The enlargement of the tibia was as great as when I was first consulted; and the skin covering it was tense, and adhering more closely than is natural to the surface of the bone. Some remedies which I prescribed were productive of no benefit. The patient's sufferings were excruciating, and it was necessary that he should, if possible, obtain immediate relief. The resemblance between the symptoms of this case and those of the case already described was too obvious to be overlooked. It appeared highly probable that they depended on the same cause; and I therefore proposed that the bone should be perforated with a trephine, in the expectation that an abscess would be discovered in its interior. To this the patient readily assented; and, accordingly, the operation was performed in the beginning of March, 1828.

My attention was directed to a spot about two inches below the knee, to which the pain was especially referred. This part of the tibia was exposed by a crucial incision of the integuments. The periosteum now was not in the same state as at the time of the former operation: it was scarcely thicker than natural, and the bone beneath was hard and compact. A trephine of a middle size was applied, and a circle of bone was removed, extending into the cancellous structure, but no abscess was discovered. I then, by means of a chisel, removed several other small portions of bone at the bottom of the cavity made by the trephine. As I was proceeding in this part of the operation, the patient suddenly experienced a sensation, which he afterwards described as being similar to that which is produced by touching the cavity of a carious tooth, but much more severe, and immediately some dark-coloured pus was seen to issue slowly from the part to which the chisel had been last applied. This was absorbed by a sponge, so that the quantity of pus which escaped was not accurately measured; but it appeared to amount in all to about two drachms. From this instant the peculiar pain belonging to the disease entirely ceased, and it has never returned. The patient experienced a good deal of pain—the consequence of the operation—for the first twenty-four hours; after which there was little or no suffering. The wound was dressed lightly to the bottom with lint; nearly six months elapsed before it was completely cicatrised; but, in about three months from the day of the operation, Mr. B. was enabled to walk about and attend to his usual occupations. He continued well when I last saw him, on the 7th of January, 1832; and the tibia was then reduced in size, so as to be scarcely larger than that of the other leg. No exfoliation of bone had ever taken place.



## CASE LXXVI.

In the beginning of January, 1830, Mr. S., thirty-four years of age, consulted me on account of the following symptoms:—

The lower extremity of the left tibia was considerably enlarged; the skin covering it was tense, and adhered closely to the parts below. He complained of a constant aching pain, which he referred to the enlarged bone. Once in two or three weeks there was an attack of pain more severe than usual; during which his sufferings were excruciating, lasting several hours, and sometimes one or two days, and rendering him altogether incapable of following his usual occupations. The pain was described as shooting and throbbing, worse during the night, and attended with such exquisite tenderness of the parts in the neighbourhood of the ankle, that the slightest touch was intolerable.

Mr. S. said, that, to the best of his recollection, the disease had begun eighteen years ago, in the following manner:—On going to bed one evening, he suddenly experienced a most acute pain in the inner ankle. On the following morning he was unable to put his foot to the ground, on account of the agony which every attempt to do so occasioned. Leeches were applied several times, and afterwards blisters; but the pain increased notwithstanding. After some weeks an abscess presented itself, and broke. This was followed by some mitigation of the symptoms. Soon afterwards another abscess formed, and broke in the neighbourhood of the first. The two abscesses remained open for a considerable time, and then healed rapidly. Mr. S. now began to regain the use of his limbs and, by degrees, was able to walk as usual.

During the following summer he had a recurrence of pain in the inner ankle, without any farther formation of abscess. For eight or ten years afterwards there were occasional attacks of pain, lasting one or two days at a time; the intervals between them being of various duration, and, in one instance, not less than nine months. After this the attacks recurred more frequently; and, during the whole of the last two years, the symptoms were nearly as severe as at the time of my being consulted.

On examining the limb, I was struck with the resemblance which it bore to that of the limb in each of the two preceding cases. There was also a remarkable resemblance in the symptoms as described by the patient, and I could not but suspect that they depended on a similar cause. I requested that Mr. Travers, who had attended one of the former cases with me, should be consulted; and he agreed with me in the opinion, that probably an abscess existed in the centre of the tibia, and that it would be advisable to perforate the bone with a trephine, with the view of enabling the contents of the abscess to escape.

Accordingly, I performed the operation, with the assistance of Mr. Travers, on the 31st of January. A crural incision was made through the skin, the angles of which were raised, so as to expose a

part of the bone above the inner ankle, to which the pain was especially referred. A small trephine was then applied, and a circular portion of bone was removed, extending into the cancellous structure. Other portions of bone were removed with a narrow chisel. At last, about a drachm of pus suddenly escaped, and rose into the opening made by the trephine and chisel. On farther examination, a cavity was discovered, from which pus had flowed capable of admitting the extremity of the finger. The inner surface of this cavity was exquisitely tender, the patient experiencing the most excruciating pain on the gentlest introduction of the probe into it.

He passed a tolerable night, and suffered but little on the following day. He continued to go on favourably until the 5th of February, when a violent inflammation attacked the limb immediately above the inner ankle. In spite of the application of leeches, an abscess formed, which, in the course of six or seven days, presented itself immediately below the part at which the trephine had been applied. An opening was made with a lancet, and a considerable quantity of pus escaped, which had apparently formed between the periosteum and bone; the latter being felt exposed at the bottom of the abscess. During the following month the inflammation excited by the operation continued, and several abscesses presented themselves in the neighbourhood of the first. These, however, all healed favourably without any exfoliation of bone taking place. The cavity made by the trephine became filled up by granulations, and the wound gradually cicatrized. From the time of the operation, the peculiar pain, from which the patient had previously suffered, was entirely relieved; and it was not long before he was quite restored to health, and able to walk and pursue his occupations without interruption. When I last saw him, nearly two years from the time of the operation having been performed, he continued well.

Since the three foregoing cases were published, first in the *Medico-Chirurgical Transactions*, and afterwards in the third edition of this treatise, I have performed a similar operation on a lad, a patient in St. George's hospital. The lower extremity of the tibia was much enlarged, and he had suffered a constant and most severe pain for a very considerable time. On the application of the trephine I exposed an abscess in the centre of the tibia, containing three or four drachms of healthy pus. The relief was immediate and complete, and the subsequent recovery from the effects of the operation was rapid. It seems to be unnecessary to enter more particularly into the history of this case, after having given the details of the former ones.

3. Absorption of the articular cartilages, to a limited extent, sometimes takes place by a process apparently different from that of ulceration. The bone becomes partially denuded, but it bears no marks of inflammation; there is no erosion of the bony surface itself; and the cartilage, which remains entire, retains its natural adhesion to it. The patient does not complain of pain in the joint, nor does suppuration follow. These changes are observed more frequently in the joints of elderly persons; and they are sometimes discovered after death,



where their existence had not been suspected during the patient's lifetime. At other times, they produce in the motions of the limb a grating, corresponding to, but less distinct than the grating which is perceptible after a fracture.

4. The absorption of the cartilage which has been just described is not, however, the only cause of grating or crackling produced by the motions of the joints. This symptom is sometimes manifestly connected with inflammation of the synovial membrane; at other times it occurs, as far as we can see, independently of any other disease, and it is then difficult to offer a reasonable explanation of it. The following case will serve to illustrate this last observation.

### CASE LXXVII.

A married lady, apparently not more than twenty-six or twenty-seven years of age, in October, 1834, having been then a good deal weakened, in consequence of her having suckled her infant for eleven months, observed a grating or crackling to be produced by certain motions of the left knee. This was not preceded by either pain or swelling, and neither pain nor swelling followed. Blisters were applied by the surgeon who attended her, but with no other result than a sensation of weakness in the limb, so that she could scarcely walk. Still there was neither pain, nor stiffness, nor swelling. After three or four months she had so far recovered from the effects of the blisters as to be able to walk; but the crackling was undiminished.

When I saw the patient in August, 1835, she was free from pain; the knee had its natural size and shape, and the only symptom was that, when the leg was extended on the thigh a grating and crackling could be felt and heard distinctly. This was especially observed on walking up stairs.

Such cases are not very uncommon, and they occur especially among young women, who have a disposition to hysteria. As far as I know they never have any unfavourable termination.

5. There is a class of cases, of no unfrequent occurrence, in which the patient suffers considerable distress, in consequence of pain referred to some of the larger articulations, and which often occasion no small degree of anxiety and alarm to the patient's friends, although there never arise any ultimate bad consequences. The cases to which I allude occur chiefly among hysterical females, but sometimes in the male sex. The disease appears to depend on a morbid condition of the nerves, and may be regarded as a local hysterical affection. At first there is pain referred to the hip or knee, or some other joint without any evident tumefaction; the pain soon becomes very severe, and, by degrees a puffy swelling takes place, in consequence either of a determination of blood to the part, or of some degree of serous effusion into the cells of the cellular texture. The swelling is diffused, and in most instances, trifling; but it varies in degree: and I have known, where the pain has been referred to the hip, the whole of the

limb to be visibly enlarged from the crista of the ilium to the knee. There is always exceeding tenderness; connected with which, however, we may observe this remarkable circumstance, that gently touching or pinching the integuments, in such a way as that the pressure cannot affect the deep-seated parts, will often be productive of much more pain than the handling of the limb in a more rude and careless manner. In one instance, where there was this nervous affection of the knee, immediately below the joint there was an actual loss of the natural sensibility; the numbness occupying the space of about two or three inches in the middle of the leg. In these, as in all other hysterical complaints, the symptoms appear to be kept up and aggravated by being made the subject of constant attention and anxiety.

No general rules can be laid down for the treatment of cases of this description. The patient sometimes, when the pain is most severe, derives benefit from the use of the following embrocation, applied tepid:—

**R.** Spiritus Rosmarini, ℥ iss.  
Misturæ Camphoræ, ℥ viiss. M.  
Fiat Embrocatio.

Or the following liniment:—

**R.** Linimenti Camphoræ Compositi, ℥ iv.  
Extracti Belladonnæ, ℥ ij.  
Fiat Linimentum.

Sometimes the symptoms have abated under the use of active purgatives; or of valerian combined with bark or ammonia; or of injections of asafœtida. Where the menstruation is irregular, we may suppose it to be of the first importance that we should endeavour to restore this function to its healthy condition; and if it be deficient, steel may be exhibited with advantage; or if it be excessive, the mineral acids, combined with sulphate of magnesia, may be administered instead. In a great number of cases, in which the symptoms, which have been just described, exist in combination of a feeble circulation, cold hands and feet, and almost complete want of appetite, the following combination of medicines will be found to be very useful:—

**R.** Infusi Quassie, ℥ ss.  
Tincturæ ferri ammoniati, ℥ ss.  
Ammonie carbonatis, gr. vj.  
Syrupi aurantii, ℥ j.  
Aquæ destillatæ, ℥ vij.  
Fiat haustus bis vel ter quotidie sumendus.

But none of these remedies will do for the patient what may be accomplished by other means. Her attention should be as much as possible withdrawn from the subject of her complaints, and directed to other objects. She should be encouraged to take exercise out of doors, especially on horseback; to rise early, so that only a moderate number of hours may be passed in bed; to live in a cheerful society,



and if she has abandoned them (which has too frequently happened,) to resume, in all respects, the habits of a healthy person.

In general it is not difficult to distinguish the cases which I have just described from those of more serious disease. Careless surgeons, however, frequently fail in their diagnosis; and even surgeons of experience do so in some instances. I do not hesitate to say, that a large proportion of young ladies, who have heretofore been supposed to labour under disease of the hip joint, and the great majority of those who have been treated as suffering from caries of the spine, have, in reality, been affected with these local hysterical symptoms, and nothing more. Except where there is a question concerning life and death, no error in surgical practice can be more dangerous than this; as it may lead to a patient being confined to her couch, almost in solitude, for months, or even for years, who ought to be taking exercise, and breathing the fresh air, and partaking of the amusements, and enjoying the society, of those of her own age.

6. We have abundant opportunities of observing that the joints of different individuals are endowed with different degrees of mobility. This is often very evident in the articulations of the fingers with the metacarpal bones. We see one person whose fingers admit of being extended so as to be in a line with the bones by which they are supported, but of no farther motion in this direction; and we see another in whom they are capable of being bent backwards, so that the nails may be brought almost in contact with the back of the hand. I suppose that this difference is to be attributed chiefly to the state of the ligaments, by which the bones are held together; and a corresponding looseness of the ligaments, but existing to a still greater extent, will explain the singular liability to dislocation which may be observed in some individuals. A gentleman consulted me in the year 1820, who had met with the accident of dislocating the patella four times in the right, and once in the left knee. The right shoulder had been twice completely dislocated, and once there had been a subluxation of the same joint. The joint of the left thumb, with the *os trapezium*, had been dislocated several times. In every instance the dislocation had been reduced with the greatest facility, and generally without surgical assistance. The patient, at the time of my seeing him, was not more than twenty-three or twenty-four years of age, and was in perfect health; except that he was subject to occasional severe headaches, apparently connected with the state of his digestive organs. No peculiarity could be observed in the form and structure of his joints. His muscles were strong, and he was capable of considerable muscular exertion; he was accustomed to a good deal of walking exercise, but had not been particularly exposed to the ordinary mechanical causes of dislocation.

#### CASE LXXVIII.

7. A lady, in the year 1808, first observed a swelling in the upper

part of one knee, which was unattended by pain, and which increased slowly, but uniformly. In the course of three years it had attained so inconvenient a magnitude, that she was induced to consent to the removal of the limb. Mr. Thomas, under whose care the patient was, performed the operation, and allowed me afterwards to examine the amputated joint.

The tumour occupied the upper part of the knee, beginning at the edge of the cartilaginous surface, and extending about three or four inches up the lower part of the thigh. It was interposed between the muscles and the bone of the thigh, so that the former were seen expanded over it. It was of a grayish-white colour; composed of fibres of a gristly semi-transparent substance, with osseous matter intermixed with it, and about two inches in thickness on each side of the femur. At the upper part it was seen distinctly originating in the periosteum; at the lower part, the periosteum could not be traced, and the structure of the bone was continued into that of the tumour. The cartilages and ligaments of the joint were free from disease. On the external surface of the synovial membrane, unconnected with the diseased structure above, there were three or four flattened bodies; each of about the size of a kidney bean, of a white colour, and of a texture somewhat softer than that of cartilage. The synovial membrane itself was free from disease.

There can be no doubt that, in this case, the original disease was the osteo-sarcomatous tumour, originating in the periosteum of the femur. The circumstance of the other tumours being found connected with the synovial membrane, although the intermediate parts were, to all appearance, in a healthy state, is remarkable; but something corresponding to this may be observed in other diseases. For example, when the gland of the breast is affected with scirrhus, it is not unusual to find small tubercles of a similar structure in the skin near it, at various distances from each other, although the intermediate adipose substance, as well as the portions of skin between the tubercles themselves, exhibit no marks of disease.

I met with another case, in which the patient appeared to labour under an enormous tumour of the hip. It was ascertained, by dissection, that the hip itself was free from disease, and that the enlargement was formed by an osteo-sarcomatous growth from the periosteum of the upper extremity of the femur. Two other cases have come under my observation, apparently similar to that just mentioned, but in which I had not the opportunity of examining the parts by dissection.

8. The following remarkable case seems worthy of being recorded, as it is one of those which might, by a superficial observer, be mistaken for caries of spine. It confirms a remark which I have made formerly, namely, that disease affecting the cervical portion of the spinal chord produces paralysis of the upper extremities, in the first instance, and of the lower extremities afterwards.



## CASE LXXIX.

A young man about twenty-one years of age, in January, 1829, after leading a very irregular life, and especially after having been much exposed to damp and cold, was seized with a violent pain in the neck, followed by considerable swelling. The swelling was situated chiefly on the right side, extending from the head to the shoulder. The patient paid little attention to his complaints; living as usual with respect to both diet and exercise; but, in spite of this neglect, in a short time the pain and swelling, in a great degree, but never wholly, subsided.

In the beginning of the following April, the upper extremity of the right side became affected with paralysis. Afterwards the opposite limb became, to a great extent, paralytic also. In this state he remained, no active remedies having been adopted for his relief, until he came under my care in the beginning of June.

At this time he complained of some degree of pain in the back of the head and neck: and he found it difficult to move the head from one side to the other. An enlargement and induration of the soft parts of the neck was still perceptible in the situation of the original swelling. There was complete paralysis of the muscles of the right arm, fore arm, and hand; those of the opposite limb were also paralytic, but some of them were still capable of acting feebly, so that he could take hold of the right hand with the left, and move it from one position to another. The muscles of the lower limbs were feeble, but were capable, nevertheless, of supporting the body in the erect posture.

The bowels were very torpid, and the evacuation of a dark colour, a good deal resembling tar in appearance.

The urine was slightly alkaline, but voided without difficulty.

Leeches were applied to the neck, and afterwards a seton was introduced. Mercury was given so as slightly to affect the gums. No amendment, however, followed the use of these remedies. The lower limbs became paralytic; and on the 19th of June the patient died, having been for a short time previously in a state of coma.

On examining the body after death, the ventricles of the brain were found to contain about two ounces of watery fluid. The brain itself was of an unusually soft consistence.

The cervical portion of the spinal chord was also softer than natural.

A quantity of soft, solid substance, of a gray colour, apparently lymph, which had become organized, was found situated between the dura mater, and the bodies of the vertebræ, occupying the whole of the anterior and some of the posterior part of the vertebral canal, and extending from the occiput downwards, as low as the fourth cervical vertebra.

A substance similar to that which was found on the inside of the vertebral canal was also found lying on the fore part of the bodies of the cervical vertebræ, extending over the oblique and transverse pro-

cesses extending through the spaces in which the nerves are situated, and surrounding the nerves themselves. The external mass was much larger than the internal, being not only thicker, but extending lower down in the neck. In some parts it was not less than an inch in thickness: in other parts thinner, and, altogether, it was of a very irregular shape.

9. The following case seems not unworthy of being recorded, as it illustrates the changes which are produced in the joints, where the patient has been liable to severe attacks of gout for a long series of years.

#### CASE LXXX.

An old lady who had suffered in an unusual degree from gout for a great part of her life, was supposed at last to labour under an organic disease of the stomach. She died on the 20th of December, 1812, and I was requested to examine the body.

Externally it was observed that several joints of the fingers were ankylosed, and the fingers variously distorted. The middle finger of the left hand was shorter than the rest, and the skin over it was loose. The bone of the second phalanx appeared to have been nearly absorbed, so that there were scarcely any remains of it; there being only a small quantity of soft substance in its place. The right wrist and elbow were ankylosed, as were also several of the joints of the toes. The knees admitted of incomplete flexion and extension; and the motion of the joints was attended with a grating sensation.

In various parts of the body there were orifices in the skin communicating with membranous cysts, situated in the adipose substance, and discharging a chalky fluid.

On dissection it was ascertained that the *pleura pulmonalis* and *pleura costalis* were universally adhering. The peritoneal surfaces of the stomach, spleen, liver, and gall bladder adhered universally to each other and to the contiguous parts. There were no other preternatural appearances in the thorax and abdomen.

There were no remains of the cartilages in the left knee. The corresponding parts of the patella and condyles of the femur had the appearance of having been worn into grooves and ridges, from their friction on each other; presenting, however, a compact surface, the cancellous structure not being exposed, as would have been the case if friction had been carried to the same extent in the dead body. A thin layer of white chalky matter had been deposited on the bones, where the cartilage had disappeared, in several places. On the margin of the articulating surfaces were several small exostoses. The ligaments and synovial membrane were little altered from their natural state; with this exception, that the thin layer of the latter, which is extended over the cartilages, had disappeared with the cartilages themselves. In the right wrist the first row of the carpal bones were ankylosed to each other and to the radius.

The other joints were not examined.



The peculiar kind of absorption of the cartilages, which had taken place in this case, and which I have observed in other cases of long-standing gout, occurs also in some of those cases of chronic rheumatic inflammation of the synovial membranes, which are often distinguished by the appellation of rheumatic gout, and of which I have given some account in the concluding part of the second section of the first chapter of this work.

In these cases the process by which absorption is affected is manifestly different from ulceration, and is altogether very remarkable. The cartilages disappear, so that the bones are exposed: but the latter present nothing corresponding to the appearance of a carious surface. They bear evident marks of having been subjected to the influence of friction; but the consequences of friction on the living are entirely different from those of friction on the dead bone. There is no exposure of the cancellous structure: a process of repair goes on simultaneously with that of destruction, and the result is the deposite of a hard and compact layer of bone over the cancellous structure, which must have been exposed otherwise.

10. Mr. Mayo has published a history of some cases, in which the ulceration of the articular cartilages took place under peculiar circumstances, having the character of being an acute disease instead of a chronic affection, as in other instances. Since Mr. Mayo's paper on this subject was published in the *Medico-Chirurgical Transactions*, some cases apparently of the same kind have fallen under my own observation. They are recorded in a former part of this volume.

11. I may take this opportunity of noticing a circumstance, which is of some importance as connected with the diagnosis of disease in the hip joint.

It occasionally happens that the two lower extremities are not of precisely the same length; and this may be the result of original formation, the femur and the tibia of one side being respectively longer than those of the other side. If the whole of this difference amounts, as it sometimes does, to an inch, or an inch and a half, the individual is observed to limp in walking, and the great trochanter belonging to the longer limb is higher and more prominent than that of the other; and this sometimes leads the superficial observer to mistake the case for one of diseased hip.

In some instances, there is a difference in the length of the two lower limbs, in consequence of disease. A diseased bone for the most part does not keep pace in its growth with the other parts of the body; but I have known the reverse of this to happen, of which the following is a remarkable instance:—

#### CASE LXXXI.

Master M. was brought to me from St. Petersburg for my opinion; in June, 1832. I saw him in consultation with Dr. Lefevre, physician to the British embassy in that metropolis.

The cicatrices of three or four abscesses were seen in the skin on the anterior and upper part of the thigh, and there was considerable thickening of the deep-seated soft parts in the same situation, there being also a manifest adhesion of them to the bone. The appearance of the limb was such as would lead to the belief that there was a portion of diseased or dead bone of the femur, with probably some new bone formed around it; and that this had produced a succession of abscesses of the soft parts, as in ordinary cases of necrosis. The history of the case seemed to justify this opinion as to the nature of the disease.

Three years and a half ago the little boy had been suddenly seized with severe pain, which was referred to the knee, but only for a few hours, at the end of which time it shifted its place to the upper and anterior part of the thigh. The pain continued, and swelling immediately took place. At the end of six months an abscess was opened, which, however, soon healed. Afterwards a second abscess formed, which was followed by others; but all of them had healed without any exfoliation having hitherto taken place.

There was some degree of stiffness of the hip-joint, but no more than might be reasonably attributed to the thickening and swelling of the soft parts in the neighbourhood. But the most remarkable circumstance in the case was, that the diseased thigh-bone, when measured from the anterior superior spinous process of the ilium of the patella, was found to be at least an inch and a quarter longer than that of the sound limb. The measurement was made repeatedly and with the greatest care, so that there could be no mistake respecting it. There was no perceptible difference in the length of the bones of the two legs.

In consequence of one limb being thus longer than the other, when the patient stood erect, with the soles of his feet planted on the ground, the great trochanter on the side of the disease appeared to project unnaturally, and this occasioned a manifest alteration in the form of the nates, somewhat corresponding to what is observed in the less advanced stage of disease of the hip-joint. That this appearance of the nates was to be attributed solely to the difference in the length of the two limbs, was proved by this circumstance, that it was at once removed by placing a book an inch and a quarter in thickness under the foot of the sound limb, so as to raise that side of the pelvis to the same level with the other.



## CHAPTER X.

## ON INFLAMMATION OF THE BURSÆ MUCOSÆ.\*

## SECTION I.

## HISTORY AND SYMPTOMS OF THIS DISEASE.

INFLAMMATION of the bursæ mucosæ is marked by nearly the same characters, and (allowance being made for the difference of the parts with which they are connected) produces nearly the same results as inflammation of the synovial membranes of the joints. In the greater number of instances, it occasions an increased secretion of synovia. In other cases, the bursæ is distended by a somewhat turbid serum, with portions of coagulated lymph floating in it. Occasionally it terminates in the formation of abscess. Sometimes the membrane of the bursa becomes thickened, and converted into a gristly substance. I have seen it at least half an inch in thickness, with a small cellular cavity in the center containing synovia. At other times, although the inflammation has continued for a very long period, the membrane of the bursa retains nearly its original structure.

Inflammation of the bursæ mucosæ may be the consequence of pressure, or of other local injury. It may arise from the too great use of mercury, from rheumatism, or from some other constitutional affection; and, in such cases, it is frequently combined with inflammation of the synovial membranes of the joints. Sometimes it has the form of an acute, but more frequently it has that of a chronic inflammation. The inflamed bursa forms a tumour, more or less distinct, according to its situation; more or less painful according to the character of the inflammation. If the bursa be superficial, the fluctuation of the fluid within it is, in the first instance, very perceptible; and, under these circumstances, if the inflammation be considerable, it extends to the

\* I include under this head the membranes forming the sheaths of tendons, which have the same structure, answer a similar purpose, and cannot with propriety be distinguished from other bursæ. I adopt the term *bursæ mucosæ*, because it has been in general use, although it ill expresses the functions of the organs to which it is applied.

surrounding parts, and occasions a redness of the skin. When the disease has existed for some time, it generally happens that the fluid is less distinctly to be felt on account of the membrane having become thickened; and, occasionally, this alteration takes place to such an extent, that the tumour exhibits all the characters of a hard solid substance, of which the fluid contents are imperceptible.

When the inflammation is of long standing, it is not unusual to find floating in the fluid of the bursa a number of loose bodies, of flattened oval form, of a light brown colour, with smooth surfaces, resembling small melon seeds in appearance. There seems to be no doubt that these loose bodies have their origin in the coagulated lymph which was effused in the early stage of the disease; and I have had opportunities, by the examination of several cases, to trace the steps of their gradual formation. At first the coagulated lymph forms irregular masses of no determined shape, which afterwards, by the motion and pressure of the contiguous parts, are broken down into smaller portions. These, by degrees, become of a regular form, and assume a firmer consistence: and at last they terminate in the flat oval bodies, which have been just described.

When inflammation of a bursa mucosa ends in suppuration, the abscess sometimes makes its way directly to the surface of the skin, and bursts externally: but I suspect that, in other cases, the matter, in the first instance, escapes into the surrounding cellular membrane, and then it is liable to be confounded with those abscesses which originate in this texture. The following circumstances seem to warrant this opinion. There is no bursa more liable to be inflamed than that between the patella and the skin; and inflammation of it not unfrequently terminates in suppuration, as I have ascertained to be the case, both by the discharge of pus, when the tumour has been punctured, and by dissection after death. It is very common to find a large abscess on the anterior part of the knee, which the patient describes as having commenced over the centre of the patella in the situation of this bursa. The abscess has a somewhat peculiar character. It raises the skin from the patella, so that the latter cannot be felt, and from this point, as from a centre, it extends itself between the skin and the fascia, equally in every direction, covering the whole of the anterior part of the knee. A careless observer, judging from the general form of the tumour, and the fluctuation of fluid, without noticing the greater redness of the skin, and the circumstance of the fluid being over, instead of under, the patella, might mistake the case for one of inflammation of the synovial membrane of the joint itself. Such an abscess must be supposed to commence either in the bursa above mentioned, or in the cellular texture. The original situation of the disease corresponds to that of the bursa: there appears to be no reason why an abscess of the cellular texture should occur in this precise spot, more frequently than elsewhere; and hence, it is reasonable to conclude, that the bursa is the part in which the abscess begins. It is not improbable that many other abscesses of the extremities may have a similar origin. The tumour which occurs in the inside of the



ball of the great toe, and which is one of those to which the name of bunion has been applied, occasionally suppurates; and I have found, on dissection, that this is formed by an inflammation of the bursa, which is here situated.

It frequently happens, after the inflammation has entirely subsided, that the disposition to secrete a preternatural quantity of fluid still remains, and that a dropsy of the bursa is the consequence; in like manner as hydrocele takes place, in some cases, as a consequence of inflammation of the tunica vaginalis of the testicle. Such tumours are very commonly met with in the neighbourhood of the wrist, and are sometimes confounded with ganglions. The enlarged bursa on the anterior part of the wrist has somewhat peculiar characters: it is bound down in the centre by the strong annular ligament, which binds down the flexor tendons; and it is prominent above and below, where the superjacent parts afford a smaller degree of resistance. Pressure made on the upper part of the tumour causes the fluid to pass altogether into the palm of the hand, and in like manner, pressure on the lower part of it causes it to ascend into the forearm.

## SECTION II.

### ON THE TREATMENT.

In the first instance, leeches and cold lotions, and afterwards blisters, or stimulating liniments, may be employed with advantage; and in particular cases these may be combined with the use of the *Colchicum*, or such constitutional remedies as their peculiar circumstances seem to indicate. Under this treatment the inflammation of the bursa may be relieved without difficulty; and in the early stage of the disease, the fluid which has been effused will become absorbed.

But where the disease has been long established, the preternatural secretion of fluid will often continue after the inflammation has entirely subsided. Under these circumstances a blister may be applied, and kept open with the savine cerate, the part being at the same time supported by a splint or bandages, so as to limit its motion, or rather, so as to keep it in a state of absolute immobility. In many cases the loose bodies, which have been described in the last section, are found in the cavity of the bursa; and these may in themselves be sufficient to keep up the formation of fluid. Under these circumstances, the first step towards a cure is to puncture the bursa, so as to allow these loose bodies to escape.

I have observed where the puncture of the tumour is followed by suppuration, and the whole cavity of the bursa is thus converted into an abscess, that, after the suppuration has ceased, no farther collection of fluid, in general, takes place, so that there is a permanent cure of

the disease. Hence, I have sometimes been induced, after using the lancet, to bring on suppuration by artificial means. This may be effected by introducing a seton or tent into the wound, or by making a free opening into the bursa, and dressing the cavity of it with lint. Even where the bursa forms the sheath of one or more tendons, this method may be employed with safety; provided that the bursa has no communication with the cavity of the neighbouring joint, and that care is taken to prevent the lodgment of pus, and the consequent formation of sinuses.

We must, however, proceed with caution where the bursa is dilated to a considerable size. Inflammation and suppuration of a large bursa sometimes disturbs the constitution in so great a degree, that it may be doubtful whether it would be prudent, in this instance, to do more than simply puncture the tumour, keeping the patient in a state of perfect quietude afterwards. A large swelling, formed by a cyst distended with serum only, or with serum and masses of coagulated lymph floating in it, occasionally is met with over the inferior angle of the scapula; occupying the situation of the large bursa mucosa, which is interposed at this part between the *scapula* and the *latissimus dorsi* muscle, but of which I am inclined to believe that it is more frequently formed by one of the bursæ of the shoulder, distended with fluid, and protruding from underneath the muscles by which that joint is surrounded. I had an opportunity of seeing a tumour of this description, which had attained a magnitude not much less than that of a man's head. I understood that the cyst was afterwards punctured, and a seton passed through its cavity, and that so much disturbance of the general system ensued as to occasion death. I have seen another case, in which death took place in a short time after such a tumour was punctured: but here the patient was otherwise in bad health, and that strict attention was not paid to his being kept in a state of quietude after the operation, which the circumstances seem to have required. I shall give an account of a more fortunate case of the same kind hereafter.

When the coats of the bursa have become much thickened, I am not aware that there is any method, by which they can be restored to their natural condition. If the diseased bursa be situated superficially, it may be removed with as much facility as an encysted tumour. I have never, indeed, performed this operation myself, nor have I heard of it being done by others, except on the bursa, which is situated between the patella and the skin; but there can be no doubt that there are some other superficial bursæ to which the operation would be equally applicable if occasion called for it. On the other hand, where the bursa envelops tendons, or where it is deep-seated, the operation must be impracticable; and where the bursa communicates with the cavity of a joint, if practicable, it must be improper.

In those cases, where the bursa over the patella has been extirpated, I do not know that the patient has afterwards suffered any inconvenience from the want of it; and, in fact, there is sufficient evi-



dence that a new bursa is ultimately formed in the place of that which had been taken away. A synovial membrane is of simple structure. It may be resolved by maceration into cellular texture; and instances are not wanting of new synovial membranes being formed where none before existed. Such is the case in an artificial joint after an ununited fracture. In a young lady, who had attained the age of ten or twelve years, labouring under the inconvenience of a club foot, a large bursa was distinctly to be felt on that part of the instep which came in contact with the ground in walking: and in another young lady, who had apparently recovered of a caries of the spine, attended with a considerable angular curvature, a bursa appeared to have been formed between the projecting spinous process and the skin.

### SECTION III.

#### CASES OF THIS DISEASE.

##### CASE LXXXII.

MARY NEWNHAM, twenty-two years of age, was admitted into St. George's Hospital, having the bursa over the right patella enlarged to the size of a small orange. It contained fluid, and the membrane of the bursa appeared to be very little thickened. At this time she experienced no pain, and there was no inconvenience, except what arose from the bulk of the tumour.

Blisters having been applied, and other methods having been employed, with a view to promote the absorption of fluid, without success, I made a puncture with a lancet, and more than an ounce of serous fluid escaped. I then introduced the blunt end of a probe, and irritated the inner surface of the bursa; in consequence of which, on the following day, there was some degree of pain and swelling, with a slight degree of symptomatic fever. On the fourth day after the operation, on removing the dressings, about half an ounce of pus was discharged. The suppuration continued, but the quantity of pus daily diminished, and, at the end of three weeks, the wound was healed, and the tumour had wholly disappeared.

##### CASE LXXXIII.

Mrs. T., between twenty and thirty years of age, in the middle of March, 1819, first observed a tumour situated over the inferior angle of one scapula, and attended with a trifling degree of pain and tender-

ness. In the course of a week, the tumour had attained its greatest magnitude, and then remained stationary. In the following April, when she came under my care, the tumour was of the size of a large cocoa-nut; of an oval shape; distinctly circumscribed; occupying the place of the large bursa mucosa, which is situated between the *latis-simus dorsi* muscle and the inferior angle of the scapula.

On the 22d of May, the tumour being nearly in the same condition, I made a puncture with an abscess lancet, and about a pint of turbid serum was evacuated, with some irregularly shaped masses of coagulated lymph floating in it. Adhesive plaster was placed over the wound, and secured by a compress and bandage: and she was desired to remain perfectly quiet in bed. The wound did not heal by the first intention; and, on removing the dressing at the end of four days, a considerable quantity of pus escaped. The discharge of pus continued, but the quantity daily diminished; no untoward symptoms took place, but nearly three months elapsed before the suppuration had entirely ceased, and the wound had healed. At this time there were no remains of the tumour, and she was in all respects well.

#### CASE LXXXIV.

A. B., a middle-aged woman, became patient of St. George's Hospital, Under Mr. Keate, on account of a tumour on the back part of the wrist, of the size of a double walnut, containing fluid; and which had been the consequence of inflammation of the bursa mucosa, which envelops the extensor tendons of the fingers. At the time of her coming to the hospital the inflammation had entirely subsided, and the tumour occasioned no inconvenience, except what might be attributed to its bulk. After having employed various local remedies without any reduction of the swelling, a puncture was made, and a considerable quantity of serous fluid was evacuated. In a short time, however, the fluid was again collected in as large a quantity as before. Afterwards M. Keate made a longitudinal incision in the skin over the tumour, and dissected out as much as possible of the bursa, leaving only that part of it which enveloped the tendons. The wound suppurated, and healed gradually; and, at first it was supposed that the operation had produced a cure. But in a few weeks after the wound had cicatrised, the tumour re-appeared, having the same character as before, but being of not more than one half of its former size: and when I last saw the patient, it continued in the same state.

#### CASE LXXXV.

Ruth Target was admitted into St. George's Hospital, in August, 1809, on account of a hard, and apparently solid, tumour, of the size of a small orange, situated between the patella and the skin, and perfectly movable on the parts below.

Having made a longitudinal incision of the integuments, I removed



the tumour with perfect facility. A slight degree of symptomatic fever followed the operation, which, however, speedily subsided, and, at the end of a month, she was discharged as cured, suffering no inconvenience except a very trifling sense of stiffness when she walked.

On examining the tumour, after its removal, it was found to be formed by the bursa, which is situated over the patella; the parietes of which had become more than half an inch in thickness, and of a ligamentous texture; while the interior retained its natural cellular structure, and was filled with a serous fluid.

I have since performed a similar operation on several patients. In each case, after the wound was healed, there was at first considerable stiffness of the knee, in consequence of the cicatrix having formed a close attachment to the anterior surface of the patella. Where, however, I had the opportunity of seeing the patient afterwards, I always found that this inconvenience had been of short duration, and that there was every reason to believe that the bursa had been regenerated. The following case is not without interest, proving as it does, beyond the possibility of doubt, that such regeneration actually takes place.

#### CASE LXXXVI.

Mary Buckley, seventeen years of age, was a patient in St. George's Hospital, in the beginning of the year 1828, on account of a tumour formed by an enlargement of the bursa between the patella and the skin. The tumour was removed entire by the late Mr. Rose.

About the beginning of November, 1828, another tumour presented itself in the situation of that which had been taken away. This tumour gradually increased in size; and when she was re-admitted into the Hospital on the 14th of January, 1829, it had all the character of an enlarged bursa, occupying the exact place of that which had existed formerly.

January 21st. I made a free incision into the tumour with a lancet. There was a cavity in its centre, from which lymph and serum escaped. The surface of it thus exposed was dressed with dry lint and a poultice over it. It soon became covered with granulations; and on the 4th of February the patient left the hospital cured.

---

#### NOTE

##### ON ULCERATION OF THE ARTICULAR CARTILAGES.

AMONG the cases which have been recorded in the foregoing pages, there are several in which the cartilages of a joint were found to have been absorbed on the surface towards the articular cavity; while the

layer, next the bone, retained its natural adhesion, and was in other respects unaltered. I have always regarded this partial removal of the cartilage as not to be explained, except on the supposition of its having been acted on by its own vessels. And, in the beginning of the fourth chapter, I have given my reasons for believing that this circumstance is by no means remarkable, or contrary to what might, *a priori*, have been expected.

My friend Mr. Key, in an interesting paper, which he has lately published in the Medico-Chirurgical Transactions, has related the history of a case, in which a similar appearance of the cartilage was connected with an inflamed state of the synovial membrane, processes or elongations of which were seen lying in contact with the articulating surfaces; and from this and some other circumstances, he has been led to infer, that this kind of absorption of the cartilages is to be attributed, not to any changes originating in the cartilage itself, but to the action of the vessels of the synovial membrane; and farther, that when inflammation of the last mentioned structure is followed by ulceration of the cartilage, the ulceration is accomplished in the same manner; the vessels of the cartilage being, in fact, unequal to such a process of destruction.

I have had no opportunity of examining the preparation from which the drawing annexed to Mr. Key's paper has been taken; and I cannot, therefore, venture to contradict the opinion which he has expressed respecting this particular case. If it be correct, it establishes a new fact in pathology; as I am not aware that there is any instance, in other parts of the body, of the ulceration or absorption of one living texture being affected by the action of the vessels of another, there being no continuity of substance between them.

The perusal of Mr. Key's paper has, however, induced me to renew my inquiries on the subject; and, in so doing, I have found what appears to me to be abundant and satisfactory evidence that the explanation, which he has offered, does not admit of a general application; and that the absorption of the cartilage commencing on the surface towards the cavity of a joint, may take place under such circumstances, that it cannot be supposed to be the result of any other agency than that of the vessels of the cartilage itself. The following facts are only a part of those which might be adduced if it were necessary, in confirmation of what has been just stated.

1. At page 53, of this volume, I have mentioned the case of a boy in whom this partial absorption of the cartilages of the knee had taken place. In some parts the cartilage had altogether disappeared; in other parts, it had been absorbed on the surface towards the cavity of the joint, while the layer, next the bone, remained entire; thus presenting the appearance of grooves, as if a portion of its substance had been removed by a chisel. Now, according to Mr. Key's hypothesis, the absorption of the cartilage, in this case, ought to have been produced by villous processes of the synovial membrane projecting into the cavity of the joint, and lying in contact with the articulating surfaces. But no such villous processes existed, nor is any thing



said in my manuscript notes of the synovial membrane having been even inflamed. Indeed, if it were inflamed at all, it must have been so only to a very small extent, as it is expressly stated, that there was no effusion either of pus or synovia, into the cavity of the joint. It is to be presumed that, if the absorption of the cartilage had been effected through the agency of the synovial membrane, it would have made the greatest progress, at the part most exposed to contact with it, namely, at the margin; and this corresponds with Mr. Key's own observations on the subject. But, in examining the condyles of the femur taken from this patient, which are preserved in spirits in the museum of St. George's Hospital, I find that this is exactly contrary to what has really happened. Throughout nearly the whole of its circumference, for the breadth of one-third of an inch, the cartilage remains of its natural thickness, and otherwise unaltered; while in the centre it has altogether disappeared, and the grooved appearance of it is observable in the intermediate space.\*

2. In the case of Harper, related at page 109, the cartilage covering the head of the femur had been destroyed by ulceration for more than half its extent, so as to expose the cancellous structure of bone. The remaining portion of the cartilage was thinner than natural; but this was more observable in some parts than in others. With the exception of one spot of limited extent, this partial loss of substance had taken place towards the cavity of the joint, the layer of cartilage next the bone being unaltered. The synovial membrane was somewhat more vascular than usual; but the increased vascularity seemed scarcely to amount to inflammation.

3. I have in my possession a drawing made from a knee, amputated within the last six or seven years in St. George's Hospital, in which the same partial absorption of the cartilage covering the head of the tibia and condyles of the femur had taken place, producing the appearance of grooves on the surface towards the cavity of the joint. In this case there are manifest indications of the same process having begun in the cartilage of the patella, and of that portion of the femur with which the patella was in contact, and to which the villous process of the synovial membrane (of which there are no indications in the drawing,) even if they had existed, could not easily have penetrated. The condyles of the femur belonging to this case are preserved in the museum of St. George's Hospital; and, on examining them, I find that the absorption of the cartilage had been almost wholly confined to the centre of the articulating surface; while at the margin, where it must have been the most exposed to the contact of the synovial membrane, scarcely any absorption of it had taken place.

4. In a paper on the ulceration of the cartilages of joints, publish-

\* It is worthy of notice that in this case there was a large abscess of the thigh, external to the knee joint. A similar abscess existed in one of the cases described by Mr. Mayo in the *Medico-Chirurgical Transactions*, to which I shall have occasion to refer presently. Three other cases have fallen under my observation, in which a large abscess, external to a joint, was accompanied with ulceration of the articular cartilages: no suppuration having taken place in the joint itself.

ed by Mr. Mayo in the 11th volume of the *Medico-Chirurgical Transactions*, a case is described, in which, on exposing the cavity of the joint, in dissection, "the surfaces of the astragalus, tibia, and fibula were found almost wholly stripped of their cartilage: what remained of this texture was thinned, and that unequally, but seemed in other respects unchanged, and adhered firmly to the bone. The same alteration was observed in the other joints, which the astragalus concurs in forming. The exposed surfaces of bone were healthy." In answer to some inquiries which I have lately made, Mr. Mayo has informed me, that "the synovial membrane was red and thickened where it lined the capsular ligament; but there were none of those villous processes projecting into the cavity of the joint which Mr. Key has described as the agents by which the absorption of the cartilages is effected." Indeed, whoever considers the peculiar form and relative position of the articulating surfaces of the ankle-joint, will, I conceive, find it difficult to understand how those processes, even if they had existed, could have extended into the joint, so as to perform the office which Mr. Key has assigned to them. If any farther proof be required of the synovial membrane not having been concerned in the absorption of cartilage, in this particular instance, it is afforded by the preparation of the astragalus which is preserved in the museum of King's College, and which Mr. Mayo has allowed me to examine. In the central part of each articulating surface the cartilage has become absorbed to a great extent, and what remains is reduced to a very thin layer, adhering as firmly as usual to the bone; but at the margin, close to the reflection of the synovial membrane over it, a narrow stripe of cartilage is almost every where perceptible; and in many places there are portions of cartilage, of their ordinary thickness, and evidently not altered from their natural condition.

In speaking of ulceration of the articular cartilages as a consequence of inflammation of the synovial membrane, I have not endeavoured to explain the exact nature of the process by which such ulceration is effected, and simply for this reason,—that I have not been able completely to satisfy my own mind on the subject. There can be no doubt that, in many instances, ulceration begins at the margin of the cartilage, where the synovial membrane is reflected over it from the neighbouring bone, or from the interarticular ligaments, where such ligaments exist; but it may still admit of a question, in what manner the ulceration is accomplished: whether it be from the inflammation extending directly to the cartilage itself, or to the bone first, and the cartilage afterwards;\* or whether, according to the views entertained

\* I am led to offer this as one of the explanations which might be given of ulceration of the cartilage, induced by inflammation of the synovial membrane, in consequence of what was observed in case 1. p. 12, in which the cartilage presented no appearance of disease, except that, "at the edge of one of the condyles of the femur, it adhered to the bone less firmly than usual." I have observed, in some other cases, but especially in those of the scrofulous disease, which has its origin in the bones, that a similar want of adhesion of the cartilage to the bone is not unfrequently to be noticed where the former is about to ulcerate.



by Mr. Key, the latter being altogether in a passive state, becomes absorbed by the action of the vessels of the fringed processes of the synovial membrane, lying in contact with it. But there are other cases of inflammation of the synovial membrane, in which ulceration begins in the centre of the cartilage; so that none of these hypotheses afford any reasonable explanation of it.

It seems not improbable, that in some of those cases, which are usually regarded as examples of simple inflammation of the synovial membrane, the inflammation may not have been confined (even in the first instance) to this individual part, but may have begun simultaneously in all the textures of the joint. This is in conformity with what is observed to happen occasionally in the eye, and in other organs; and, under such circumstances, it is no more than might be expected, that, as the inflammation subsides, the cartilage should ulcerate either in the centre, or in some other part of its surface. Nor is this a merely speculative opinion: at least, I am much mistaken if it be viewed in that light by any one who, after having perused the history of the following case, considers what would probably have happened if the patient had not died of another disease, before there was time for the disease in the joint to have run its course.

A gentleman, about twenty-five years of age, had laboured for several years under a disease of the brain, in consequence of which he had been in a state of complete helplessness and imbecility. In the summer of 1820, he became indisposed otherwise: there was a cluster of enlarged glands in the left groin, and a purulent sediment was deposited by the urine. I was now desired to see him in consultation with Dr. Maton, who was his ordinary medical attendant. Soon afterwards, it was observed that there was a general tumefaction of the left thigh and nates, and the patient complained of pain in certain motions of the limb. Under the treatment employed, the tumefaction subsided: but immediately afterwards a violent attack of diarrhœa took place; under which he sunk and died on the 29th of July.

On examining the body, we discovered an abscess, which seemed to have had its origin in the cellular membrane of the pelvis, near the neck of the bladder, which had burst into the neighbouring portion of the urethra, and which had also extended forwards on the left side, so that it could be traced as high as the mass of enlarged glands in the groin.

The whole of the muscles surrounding the left hip-joint were preternaturally soft and vascular, and so altered from their natural condition that they could be lacerated by the slightest force. They also were to a considerable extent detached or separated from each other, apparently in consequence of a serous fluid which had been effused between them, but of which nearly the whole had become absorbed. The capsular ligament and synovial membrane of the joint were of a red colour, and unusually vascular: and the cartilages covering the head of the femur, and lining the acetabulum, were also red, and of a soft consistence, giving to the fingers a sensation somewhat resembling that which is produced by touching velvet.

In the scrofulous disease of the joints, which is described in the fifth chapter, the first change commonly observed is, that the cartilage adheres less firmly than is usual to the bone, so that it may be easily separated from it. This is followed by absorption of the cartilage, beginning on the surface towards the bone. Occasionally red spots are observed in the cartilage, which might be supposed to indicate an increased vascularity preceding ulceration, and, in two cases (that of Scales, page 95, and King, page 97.) vessels injected with red blood could be distinctly traced extending from the bone into the cartilages covering them. A similar appearance has been observed and described by Mr. Mayo, and a preparation exhibiting the vascularity of inflamed cartilage has been preserved by him in the Museum of King's College, London.

The degeneration of the cartilage into a fibrous structure is an uncommon circumstance; and I suspect that it is *one* cause of the crackling of the joints, which is not uncommonly met with in persons somewhat advanced in life. I have no doubt that it often exists where it is never followed by ulceration; but I am also well assured that, in many other instances, it precedes, and, in fact, forms, the first stage of this disease: and several cases, confirming this observation, are recorded in former parts of the present volume.

There are other cases, in which what I have described as primary ulceration of the cartilage is preceded, not by this peculiar change of structure, but by a chronic inflammatory affection of the bone to which the cartilage is attached. I do not undertake to explain how these two orders of cases are to be distinguished from each other in the living person: and, in fact, in the present state of pathological science, it is no more possible to do so, than it is to determine whether a node, formed by a thickening of the periosteum, has originated in the periosteum itself, or in the bone which it envelops. Indeed, it is only during the very early stage of the disease that this distinction can be made, even by the morbid anatomist; as, whatever may have been the state of the bone originally, its cancellous structure becomes affected with chronic inflammation as soon as ulceration originating in the cartilage has extended to it.

Mr. Key has expressed some doubts whether, in the ordinary disease of the hip-joint, the cartilage is the part primarily affected; and seems to regard it rather as the consequence of inflammation of the *ligamentum teres*. On this, as on other subjects connected with these inquiries, I do not undertake to do more than state the results of my own individual experience; and they are as follow:—During a series of years, I sought every opportunity of examining the morbid appearances of the hip-joint, more especially in the early stage of disease, whatever the disease might be; and, in the cases which came under my observation, I certainly found, in children under the age of puberty, that the scrofulous disease described in the fifth chapter predominated, while, in adults, the disease, for the most part, manifestly began either in the cartilage itself, or in the surface of the bone beneath. In making this observation, of course I do not mean to contradict



what I have formerly stated with respect to to the occurrence of ulceration of the cartilages of the hip as a consequence of inflammation of the synovial membrane. Neither do I mean to assert, that there is no such thing as inflammation of the *ligamentum teres* preceding ulceration of the harder textures: but I am not aware that I have ever met with an instance of the kind; nor is it what I should have much expected to be the case, considering how little liable the other articular ligaments appear to be to inflammatory affections.\*

Notwithstanding the ingenious arguments advanced by Mr. Key, I must acknowledge, that I find no just grounds for the opinion, that the articular cartilages are so little liable, as he supposes them to be, to become ulcerated from the action of their own vessels. They may be regarded as bearing nearly the same relation to the synovial membrane which the transparent cornea bears to the *tunica conjunctiva*: yet how rare is it to find ulcers of the last-mentioned texture, and how frequent are ulcers of the cornea! I am not aware that there is any good reason to believe that the capability of ulceration is greater in those textures which possess much vascularity than it is in others. It is true, that tendons do not readily ulcerate; but the same observation may be made with respect to the muscles to which they are attached, although the latter receive a larger supply of blood, and, apparently, have their vital powers more developed than almost any other part of the animal system. The cicatrix of an ulcer, after a certain time, becomes less vascular than the skin by which it is surrounded; yet, it is well known that the former is made to ulcerate from causes, which would not produce ulceration in the latter; and this circumstance is, indeed, usually regarded as a proof of the cicatrix being endowed with inferior vital powers to those which belong to parts of original formation. But, setting these arguments aside, it may be observed that, although the articular cartilages in the adult, and when free from disease, exhibit no vessels capable of carrying red blood, they must, nevertheless, be well supplied with the means of growth, and, probably, have greater power of reparation than any other textures in the body. None are exposed in the same degree to the influence of pressure and friction, which, however, produce no change in their

\* The view which I have taken of the more important diseases which occur in the hip-joint derives confirmation from what we see of those diseases of the joints between the bodies of the vertebræ which terminate in caries of the spine. We cannot overlook the correspondence between the diseases of the spine and those of the hip; nor how they occur under similar circumstances, run nearly the same course, and seem for the most part to depend on the same state of constitution. But the joints between the bodies of the vertebræ have no synovial membranes: and I do not know that there is the smallest evidence in favour of the opinion, that the ligaments of the spine are ever the parts primarily affected. I have formerly stated, "that an extensive caries of the spine may have its origin, sometimes in an ulceration of the intervertebral cartilages, and, at other times, in a morbid condition of the cancellous structure of the bodies of the vertebræ;" and, whoever will be at the pains of seeking opportunities of studying the pathology of caries of the spine by dissection made at an early period of the disease, will, if I am not much mistaken, find abundant reason to confirm the truth of the above observation.

condition. As long as they are thus exercised, they retain their natural thickness, and all their properties unimpaired; but, when these causes cease to operate, they waste like other organs, which are not kept in constant use, and, in the course of time, almost wholly disappear.

THE END.



LECTURES

ON THE

DISEASES

OF THE

URINARY ORGANS.

BY

SIR BENJAMIN C. BRODIE, BART. F.R.S.

SERJEANT SURGEON TO THE QUEEN.

---

Second American, from the last London Edition.

With the alterations and additions of the Author.

---

NEW YORK: LEA, BROTHERS, & CO.,

125 NASSAU ST. (COR. W. 4TH ST.)

PHILADELPHIA:

LEA & BLANCHARD.

1847.

WEST BROOKFIELD, MASS.  
MERRIAM AND COOKE, PRINTERS.



## ADVERTISEMENT.

---

I HAVE endeavored to make this edition of my Lectures on the Diseases of the Urinary Organs more worthy of being presented to the Public, by introducing into it the results of my later and more extended experience on the subjects to which they relate; and it has been the want of the leisure necessary for the accomplishment of this object that has caused the publication to be thus long delayed.

The present volume is not very much increased in size as compared with its predecessors. Nevertheless with the exception of the Lectures on Calculi of the Urinary Bladder and Lithotomy, there are few parts of it which remain such as they were formerly. Several errors are, I hope, corrected: some of the views which I had been led to entertain of disease are modified; and there is a considerable proportion of new matter. In the latter is included a Lecture on the Operation of Lithotrity, on which in the former editions of this work I did not feel myself competent to offer more than a few general observations. I have now ventured to discuss this new mode of treatment more at length, giving some practical instructions for the performance of the operation, which may probably

be acceptable to the younger members of our Profession, and to those whose minds have not yet been directed to the subject; at the same time endeavoring to assign to it what I believe to be its proper place among the appliances of surgery, and what, if I am not greatly mistaken, will be conceded to it by others, when time and experience shall have dissipated alike the prejudices of those who under-rate its importance and usefulness, and of those who hold it to be more useful than it really is.



# CONTENTS.

---

## LECTURE I.

	Page
On Diseases of the Male Urethra	9
Stricture of the Male Urethra	9

## LECTURE II.

Stricture of the Urethra— <i>continued.</i>	19
Diagnosis in Cases of Stricture of the Urethra	23
Treatment of a Retention of Urine from Stricture	25

## LECTURE III.

On the Cure of Stricture of the Male Urethra	31
--	----

## LECTURE IV.

Treatment of Stricture of the Male Urethra— <i>continued.</i> Urinary Abscesses and Fistulae	43
Obstruction of the Urethra arising from mechanical Injury, and their treatment	46

## LECTURE V.

On some other Diseases of the Male Urethra	51
Diseases of the Female Urethra	52
Irritable bladder	54
Paralysis of the Bladder	55
Inflammation of the Bladder	58
Incontinence of Urine	64

## LECTURE VI.

Fungus Hæmatodes of the Bladder	66
Symptoms affecting the Bladder in consequence of Disease in the Kidney	69
Treatment of these Cases	75

## LECTURE VII.

Inflammation of the Prostate Gland	78
Chronic enlargement of the Prostate Gland	82
Symptoms of the Chronic Enlargement of the Prostate Gland	84

## LECTURE VIII.

Treatment of the Chronic Enlargement of the Prostate Gland	93
Scirrhus of the Prostate Gland	102

## LECTURE IX.

Urinary Calculi	104
Sand in the Urine	105

## LECTURE X.

Renal Calculi	117
---------------	-----

## LECTURE XI.

History and Symptoms of Calculi of the Bladder	128
--	-----

## LECTURE XII.

Calculi of the Bladder— <i>continued</i>	142
Diagnosis of Calculi in the Male Bladder	143
Treatment of Calculi of the Male Bladder	145

## LECTURE XIII.

Operation of Lithotomy	155
------------------------	-----



## LECTURE XIV.

On the Causes of Death after Lithotomy	168
On some other Methods of Lithotomy	177
Calculus of the Prostate Gland	179
Treatment of Calculus of the Female Bladder	179

## LECTURE XV.

Lithotrity	182
------------	-----

On the 1st of June 1870  
 I received from you  
 a copy of your  
 Treatise on  
 the Calculus of  
 Variations

I have just received  
 your letter of the 1st  
 of June 1870

I am very glad to  
 hear that you have  
 received my  
 Treatise on  
 the Calculus of  
 Variations

I have just received  
 your letter of the 1st  
 of June 1870

I am very glad to  
 hear that you have  
 received my  
 Treatise on  
 the Calculus of  
 Variations

I have just received  
 your letter of the 1st  
 of June 1870

I am very glad to  
 hear that you have  
 received my  
 Treatise on  
 the Calculus of  
 Variations

I have just received  
 your letter of the 1st  
 of June 1870

I am very glad to  
 hear that you have  
 received my  
 Treatise on  
 the Calculus of  
 Variations



ON  
THE DISEASES  
OF THE  
URINARY ORGANS.

---

LECTURE I.

IN this and the following lectures I propose to draw your attention to the diseases affecting the urinary organs, as far as these come under the cognizance of the surgeon.

Among all the important subjects which we are required to investigate, I know of none more important than this. These diseases are always a source of great anxiety, in many instances of pain and misery, to the patient; and for the most part, if allowed to take their natural course, they terminate in his destruction. At the same time there is no class of diseases in which we are, on the whole, enabled to render those who suffer more essential service; often by removing the disease altogether; at other times by relieving the more distressing and dangerous symptoms. I shall call your attention first to the diseases of the urethra; afterwards to those of the bladder and prostate gland. My concluding observations will relate to urinary and other calculi.

*On the Diseases of the Male Urethra.*

The urethra of the male being long and narrow, complicated in its structure and functions, you will not be surprised to learn that it is liable to more numerous as well as to more formidable diseases than the short, wide, and simple urethra of the female. What I know of the diseases of the latter may be comprised in a few words; while those of the former will require a more lengthened investigation.

*Stricture of the Male Urethra.*

The canal of the urethra may be partially or completely obstructed in various ways.

Some of these causes of obstruction are to be looked for in the parts which are external to the urethra, and will be noticed in future lectures. At present I shall confine my observations to those obstructions which have their origin in the urethra itself, and to which the name of stricture of the urethra is commonly applied.

The persons most liable to be affected with this disease are those who have passed the age of puberty, but have not yet passed the middle period of life. Occasionally, however, we meet with it in children; and in a few instances it begins to exist in the latter part of life. It may sometimes be traced as the consequence of a severe or long continued attack of gonorrhœa: and it is not unusual to ascribe it to the use of irritating injections administered on account of that disease. It would seem that whatever increases the stimulating qualities of the urine, so as to make it a cause of irritation to the parts with which it comes in contact, may lay the foundation of this disease. Thus we find it where the urine deposits the lithic acid sand, where it is habitually overloaded with the lithate of ammonia, or where it is alkaline, and deposits crystals of the triple phosphate of ammonia and magnesia. In some rare instances it immediately follows mechanical injury: but this last variety of stricture presents some peculiarities, which make it worthy of being considered separately.

We find a patient laboring under a difficulty in voiding his urine. It flows in a diminished stream, and the diminution gradually increases, until at last there is no stream at all, and it escapes only in drops. If the patient dies, and we have the opportunity of examining the morbid appearances, we find some portion of the urethra contracted, and the mucous membrane, at the contracted part, thickened; and deprived of its natural elasticity. The thickening seems at first to be of the simplest kind; and we cannot explain it better than by ascribing it to an interstitial deposit of coagulated lymph (or albumen) which has been organized. If the disease has existed for many years, the contracted portion assumes a structure approaching to that of cartilage, and the parts immediately in contact with it partake of this alteration to a greater or less extent. We observe also another change as the disease advances. Instead of being confined, as it generally (though probably not always) is, in the first instance, to a small portion of the canal, the contraction extends in both directions, that is, towards the bladder and towards the external orifice, being however still more complete at the point at which it was originally established, and becoming gradually less as it recedes from it.

If we carry our researches further, we find that in the majority of instances the disease began in the anterior portion of the membranous part of the urethra, immediately behind the bulb, and in the situation of the triangular ligament of the perineum; that in some instances it had its origin in the urethra somewhere between the part just mentioned and the external orifice; and that in a few cases it is confined to the external orifice and the canal immediately adjoining to it. Occasionally, where the original and principal stricture has been in the membranous portion of the urethra, there is another stricture anterior to it;



and in cases of very long standing it is not unusual to find the greater part of the canal in a thickened and contracted state.

But here, as on most other occasions, morbid anatomy affords us but an imperfect lesson in pathology; and it is only from the observation of what happens in the living body that we can learn one of the most important circumstances in the history of this disease. While in some cases there is from day to day but little variation in the size of the stream of urine, we find in others that it varies greatly, so that a patient who one day voids his urine with so much facility that he is scarcely conscious of the existence of any impediment to his doing so, on the following day may void it only in drops, or even be unable to void it at all. This change, moreover, may take place in a very short space of time. The difficulty of micturition may almost immediately follow too copious libations of those liquors which cause the urine to be loaded with an excess of lithic acid, or lithate of ammonia; such for example as punch or champagne; and, as I shall explain more fully hereafter, it may subside even more suddenly than it took place after the pressure of a full-sized bougie against the anterior part of the structure, or the application to it of the nitrate of silver. The permanent alteration in the condition of the urethra, which is disclosed to us by dissection, will not account for this phenomena; and we are compelled to refer them to some power of contraction which exists in the living body, and is wanting in the dead. A multitude of facts which you will meet with in practice, can be no otherwise explained; and no one much conversant with these cases will doubt that the distinction between spasmodic and permanent stricture is well founded.

What I am about to mention seems to throw some light on this subject. Spasmodic stricture is always situated in the membranous portion of the urethra, where the canal is surrounded by a sort of sphincter muscle of no considerable size, connected by a small double tendon to the arch of the pubes. A particular description of this muscle has been given by the late Mr. Wilson, in the first volume of the *Medico-Chirurgical Transactions*; and it seems not unreasonable to suppose that it is the real seat of these spasmodic affections. We find nothing like spasmodic stricture in the anterior part of the canal, where there are no muscular fibres in immediate contact with it.

Instances are not wanting of persons who have been for a considerable time liable to occasional attacks of retention of urine from spasmodic stricture of the urethra, although in the intermediate periods there was no perceptible diminution of the stream of urine; and hence we are justified in the conclusion that a spasmodic stricture may exist independently of any actual organic disease. At the same time it must be acknowledged that the existence of a purely spasmodic stricture is of rare occurrence. Repeated attacks of spasmodic contraction, attended with violent efforts and straining to evacuate the contents of the bladder, cannot fail to lay the foundation of a permanent thickening of the mucous membrane; and at all events there can be no doubt that what was from the beginning a permanent stricture of the membranous portion of the urethra is always more or less liable to be affected with

spasm. Even in the oldest cases of this description, we find the patient voiding his urine one day with tolerable facility, and another day only in drops, or even suffering from a complete retention of urine in the bladder.

A stricture which affects the external orifice and anterior extremity of the urethra is, in many cases, connected with an adhesion of the inner surface of the præpuce to the glans. Such adhesion is usually the consequence of a congenital narrowness of the præpuce, combined with want of due attention on the part of the nurse to the child's cleanliness; and hence it is that patients who labor under this kind of stricture frequently declare that they know not when the disease began, and that they cannot remember the time when the urine flowed in a full stream. The contraction thus established goes on increasing, but so gradually that it may not occasion a retention of urine, nor even any serious inconvenience, until after the middle period of life. In other cases a stricture in the anterior part of the urethra, whether situated near the orifice, or two or three inches from it, seems to be the result of a chronic inflammatory affection of the mucous membrane. There is a slight degree of pain in making water, a gleety discharge, approaching in its character more nearly to mucous than to pus, and a diminution of the stream of urine, which proceeds more rapidly than where the disease had begun in childhood, and by and bye a gristly induration may be felt through the substance of the *corpus spongiosum*, marking its exact situation, and extent of the disease. The other causes of stricture of the urethra, whether in the anterior portion of the urethra, or near the bulb, have been already noticed.

A permanent stricture of the urethra cannot exist for any long period without the urethra becoming diseased otherwise. Small irregular prominences or tubercles are sometimes found on its inner surface, which seem to consist of minute deposits of coagulated lymph, which have become organized. Occasionally a narrow membranous band is seen extending from one side of the urethra to the other, as if there had been a partial adhesion of the opposite surfaces, which had afterwards become elongated. The orifices of the mucous glands and those of the prostatic ducts are often preternaturally dilated, and indeed the whole canal of the urethra behind the stricture is widened, in consequence of the bladder forcibly impelling the urine into it, there being at the same time an insufficient outlet for its escape.

This dilatation of the urethra is most remarkable when the stricture is in the anterior part of the canal. I attended a gentleman, who for many years had labored under a stricture at the distance of three inches behind the external meatus. The posterior part of the urethra was so much dilated, that when he made water, a tumor, as large as a small orange, and offering a distinct fluctuation, presented itself in the perineum. It might be compared to a second bladder. Once, when he sent to me, laboring under a complete retention of urine, I punctured the tumor in the perineum with a lancet. Immediately the urine gushed out in a full stream. From that time it flowed regularly through the artificial opening; all difficulty in voiding it was at an end;



and thus I was enabled to direct my whole attention to the dilatation of the stricture, which was now speedily accomplished.

In some cases of long standing, we find a gristly indurated mass at the lower portion of the penis, where it is covered by the scrotum. This is probably, in some instances, the contracted portion of the urethra, thickened and converted into a substance approaching in its character to cartilage. But in other cases it depends on a different cause, as is plain from the following history :—A gentleman who had passed many years in a hot climate, returned to England, laboring under a stricture of the urethra, and voiding his urine with great difficulty. A hard oblong tumour could be felt in the neighborhood of the stricture, though somewhat anterior to it, at the upper part of the scrotum. I dilated the structure, so as to enable the patient to introduce a bougie for himself; but still the tumor remained unaltered. He died about a year afterwards of an accidental attack of disease in the brain; and I found, on dissection, that the tumor had arisen from a deposition of lymph into the cells of the *corpus spongiosum*. Immediately behind the stricture there was an orifice, leading into a long and narrow sinus, extending from the urethra into the gristly substance of the tumor. The direction of the sinus was from behind forwards, so that it was evident that it could not have been produced by the improper use of the bougie. I conclude that it was the result of the forcible and repeated pressure of the urine against the urethra behind the stricture. The same cause, of course, was sufficient to produce the gristly induration around it.

---

In the foregoing observations, which have been intended chiefly to illustrate the pathology of stricture of the urethra, I have necessarily anticipated some of the observations that I have to offer respecting the symptoms by which it is indicated in the living person, and the diagnosis of the disease.

If a man under the middle period of life applies to you complaining of a difficulty of making water, the probability is that he labors under a stricture of the urethra. If an old man applies to you under the same circumstances, stating at the same time that his symptoms began several years ago, you may draw the same conclusion. But if he tells you that his symptoms are of later origin, you will have little reason to suspect the existence of stricture of the urethra, but great reason to believe that he labors under an enlargement of the prostate gland. Stricture of the anterior part of the urethra, for the most part proceeds very slowly; so that the patient, in some instances, scarcely notices the diminution of the stream of urine, until he is actually compelled to strain in voiding it. A complete retention of urine does not occur until a very late period of the disease; and whenever it does occur, it is scarcely ever relieved spontaneously, that is, without the assistance of art. In these cases, there is generally a slight sense of scalding as the urine flows; and a mucous or muco-purulent discharge is a frequent, but not invariable, concomitant of the other symptoms.

In cases of stricture affecting the membranous portion of the urethra, where the disease in its origin is purely spasmodic, it may be that the patient's attention is first drawn to his complaint in consequence of his being suddenly affected with a complete retention of urine, induced by some irregularity as to diet, exposure to cold, or perhaps by the application of a blister. But in another and much more common series of cases, the history is nearly as follows:—The patient voids his urine in a diminished stream. The diminution gradually increases, being sometimes attended with a slight mucous or muco-purulent discharge. By and bye there is a complete retention of urine. This subsides spontaneously, or is relieved by art. After an interval (which may vary from weeks to months, or even to years), he is overtaken by another attack of retention. During the whole of this time the stream of urine continues to become smaller; it is flattened, or otherwise altered in shape, or divided into two. At last the urine never flows in a stream larger than a thread, nor without great effort and straining. In some cases it dribbles away constantly and involuntarily, and the patient's clothes by day and his bed by night are absolutely sopped with urine, making him disgusting to himself and to all around him. This involuntary discharge of urine does not indicate an empty and contracted bladder. The bladder in fact is loaded with urine, and it is when it does not admit of further distention that the urine overflows, and all beyond a certain quantity escapes without the patient being able to prevent it, the bladder being at the same time to be felt like an enormous tumor in the lower part of the abdomen. The exceptions to this rule are very rare; and it applies not only to the involuntary flow of urine in cases of stricture, but also to that which takes place under other circumstances.

The symptoms of retention of urine are sufficiently formidable, and not the less so as they generally attack the patient suddenly. He is perhaps sitting with his friends after dinner, and feels an inclination to make water; in attempting to do so, however, he is disappointed. A second and third attempt are made after some time, and all without success. Now the case assumes a more serious aspect. An indescribable uneasiness is felt in the region of the bladder. The efforts to void the urine are no longer voluntary. The patient is compelled to strain, and the whole of the abdominal muscles are in convulsive action, instinctively endeavoring to relieve the bladder of its contents, but all to no purpose. The bladder may be felt hard, and enlarged above the pubes. The heart sympathises with the local irritation, the pulse is hard and frequent, the face flushed, the skin hot, and the tongue is covered with a white fur. The violent efforts of the patient force out a few drops of urine, which give some relief; but the kidneys go on secreting, and the relief is only temporary. In the great majority of cases, the spasm is spontaneously or artificially relieved; but there are, nevertheless, numerous examples to the contrary, in which the retention terminates in death. The bladder itself may be ruptured at the



fundus, the urine escaping into the cellular membrane, and into the cavity of the peritoneum. Such an event occurred in St. George's Hospital many years ago. The patient exclaimed, after a violent paroxysm of straining, that the bladder had burst into the belly. He died; and, on examining the body, it was ascertained that the poor fellow's words were true. This case, and another similar one, have been published by Sir Everard Home. Fortunately such cases are rare.

In most instances, the rupture is not of the bladder, but of the urethra behind the stricture. Conceive a distended bladder, and the spasmodic action of the abdominal muscles and diaphragm of a powerful man acting like a syringe and forcing the urine through the lacerated urethra into the cellular membrane. In fact the scrotum, the penis, the perineum, sometimes even the groins, are enormously distended with urine. The first effect of this mischief is to relieve the patient's sufferings. There is no more straining, and the spasm of the stricture, no longer excited by the pressure behind, becomes relaxed, so as to allow some of the urine to flow by the natural channel. After this deceptive interval of ease, another order of symptoms shows itself. The urine, under any circumstances, would irritate the parts unaccustomed to its contact; but in a case of retention of urine, it has been long in the bladder; much of its watery part has been absorbed; and it is in consequence unusually impregnated with saline matter, so that its stimulating properties are much increased. Wherever this acrid fluid penetrates, it first excites inflammation, and then kills the parts with which it is in contact. The patient is seized with shivering; the skin of the scrotum, penis, and other parts becomes red and inflamed. If you make incisions into it, you find black offensive sloughs underneath. If the incision be not made, or be not sufficiently extensive, the skin becomes speckled with black spots, which increase in size, forming large sloughs. Sometimes a black spot is seen on the glans penis: an almost fatal symptom, indicating that the whole of the *corpus spongiosum* is infiltrated with urine. As this process of mortification goes on, the constitution becomes affected, as it would have been if the mortification had arisen from any other cause. At first the pulse is full, and the skin hot; but the depressing effects of an extensive destruction of living parts are soon manifest. The heart beats feebly and frequently; then the pulse becomes irregular, and afterwards intermittent. The skin is cold and clammy; the patient is troubled with an incessant hiccough, which nothing relieves for more than a few minutes. By and bye a low delirium supervenes, which is followed by coma and death.

But the danger from the effusion of urine is not the same in all cases. In the majority the effusion takes place in front of the triangular fascia of the perineum, or else the fascia gives way, and allows the urine to pass forward to the superficial parts, instead of penetrating to the deep-seated; and under these circumstances, life may generally be preserved by the prompt interference of the surgeon.

In a very few cases, the effusion extends into the loose cellular membrane which surrounds the bladder, and the patient's case is hopeless.

The time during which a retention of urine may continue before a rupture of the urethra or bladder takes place, is much longer than you would expect. Such a catastrophe as that which I have endeavored to describe rarely occurs before the third or fourth day. It may indeed occur sooner; but often the period is even later than this. The retention may continue for a week, with occasional intermissions, during which small quantities of urine are discharged; then it may become complete, and, the urethra giving way, the urine may be extravasated. The secretion of urine may be more or less abundant; the bladder may be more or less capable of dilatation; and the period of the extravasation taking place must vary accordingly.

I am much mistaken if a stricture is not sometimes destroyed, at least in part, by ulceration. For example: I attended a gentleman who had labored under a stricture of the urethra for a great many years. He voided his urine with the greatest difficulty, the stricture being very rigid and unyielding; but I succeeded in introducing a catgut bougie, and this enabled him to make water in a small stream. Under these circumstances he was seized with pain in the act of making water, which lasted for some minutes afterwards, being referred to the situation of the stricture in the posterior part of the urethra. The pain became more severe, and the patient described it to be intolerable, saying that he could compare it to nothing but the sensations which he supposed would be produced, if melted lead had been poured into the canal. Every half hour he had a desire to make water, and his groans might be heard, not only through the whole house, but even in the street. In the course of a few days these symptoms began gradually to abate, and now it was discovered that the urine flowed in a much larger stream. When the attack had completely subsided, the condition of the patient was much improved, and he made water more easily than he had done for many years. I know not how all these circumstances can be so well explained, as on the supposition of the stricture having been in a state of ulceration.

Such a case is rare; but what I am about to describe is common enough. The patient complains of more than usual difficulty in voiding his urine; but the difficulty does not amount, at least in the first instance, to an absolute retention. Perhaps he has a shivering. There is a sense of fullness in the perineum; and some degree of deep-seated induration is perceptible in one part. This gradually increases, and a tumor presents itself under the skin of the perineum, surrounded with more or less of œdematous effusion, especially into the scrotum. The skin becomes inflamed, and the fluctuation of fluid is perceptible underneath. An abscess bursts, or is opened with a lancet, and a considerable quantity of putrid pus is discharged. Here the œdema of the neighboring parts subsides. Pus continues to flow through the orifice of the abscess, and after some time it is observed that urine flows through it also. The discharge of pus diminishes, but the urine flows in larger quantity; and whenever the patient makes



water, part escapes through the natural channel, and part by the new opening. The abscess has evidently a communication with the urethra behind the stricture. If you have an opportunity of dissecting the diseased parts while the abscess is recent, you find it to open into the urethra by a ragged irregular orifice. If you examine them at a later period, the orifice in the urethra is found to be smooth, regular, and rounded at the margin; the external orifice in the perineum is reduced to a narrow diameter, and is seen in the center of a button-like projection of the skin; and the abscess itself is contracted, perhaps reduced to a narrow passage, with a smooth surface, which presents somewhat of the appearance of it being lined by a mucous membrane. We now say that the case is one of *fistula in perineo*. The whole of these phenomena are easily explained. The urethra, constantly teased by the pressure of the urine against it, ulcerates behind the stricture. If the stricture had been completely closed, as in the case of retention of the urine, an extensive extravasation of urine would have immediately taken place; but under the existing circumstances, this does not happen, and only a moderate quantity, perhaps not more than a few drops, dribbles into the cellular membrane, sufficient to induce inflammation and suppuration; and no further local mischief. A *fistula in ano* is formed in the same manner, by ulceration of the rectum, allowing the escape of a minute quantity of *fæculent* matter into the neighboring textures.

The formation of the abscess in the perineum is always attended with some degree of fever. but sometimes the febrile symptoms are very urgent: the skin is hot, the pulse rapid, the tongue dry and brown, or covered with a black crust. If the abscess be left to burst of itself, it is more than probable that the patient will perish under these typhoid symptoms; if it be opened, a dark-colored offensive putrid pus is discharged, the bad qualities of which are manifestly owing to an admixture of urine. If the operation be not imprudently deferred, an immediate improvement follows the opening of the abscess; the pulse becomes less frequent, the skin less hot, the tongue clean and moist, and the patient, who appeared to be on the verge of death, is restored to life, and comparatively to health.

I have described the simplest form of the urinary abscess. But it is often more complicated. It is not always confined to the perineum. Sometimes it makes its way forward through the upper part of the scrotum, and presents itself on the lower part of the penis, between the scrotum and the glans. At other times it burrows in the opposite direction, forming a large collection of matter in the nates, or it may burst in the groin or in the scrotum. In one case, in which I had the opportunity of examining the body after death, I found a large abscess in front of the pubes, extending half way towards the navel; another among the adductor muscles of the left thigh; and a third among the muscles at the upper part of the right thigh, as far outwards as the *foramen ovale* of the ischium; the periosteum having been destroyed, and the bone itself rendered carious to a considerable extent: and all these abscesses could be traced into an

abscess in the perineum, communicating with the urethra behind a stricture by a small orifice. In another case which I attended with Mr. Samuel Cooper, there was a *fistula in perineo*, communicating with a large abscess of the pelvis on one side of the bladder.

I have seen a few cases in which an abscess of this kind had made its way into the rectum, forming a fistulous communication between it and the urethra. If such communication be of a large size, it is a source of great distress, as fæculent matter occasionally passes through it from the rectum into the urethra. If it be small, however, the absolute inconvenience is trifling, and the patient is rendered sensible of its existence only in consequence of a small quantity of air escaping occasionally by the urethra: and this may continue, without any further symptoms supervening, for many years.

There is one form of abscess of the perineum, which may be compared to what has been called a *blind fistula of the rectum*; the abscess having an opening into the urethra and none externally. Such an abscess may at one time be inflamed, swollen, and tender; then these symptoms may subside, but only to recur at a future period; and this state of things may continue for many years. I conclude that in these cases the abscess is formed in the usual way, by ulceration of the urethra, and the infiltration of a small quantity of urine into the cellular texture; but that, when a certain quantity of matter is collected in it, it bursts into the urethra, instead of finding its way to the surface, the communication being of sufficient size to prevent any considerable accumulation of matter afterwards.

A fistula of this description is a source of inconvenience and mischief, and of nothing else. It is not so with a fistula which has an external opening. The latter answers, in some measure, the purpose of a safety-valve to the bladder, enabling the patient to void his urine even where the stricture is closed, and lessening the liability to retention. But even in this case the good is not unmixed with evil: It occasionally happens that the external orifice of the fistula becomes inflamed and swollen, or that it actually heals, and that this is followed by an accumulation of matter within, attended with many, or with the whole of the symptoms which marked the first attack of the disease. And there may be even greater mischief ultimately. Mr. Vincent and myself attended a gentleman with a *fistula in perineo*, which he had neglected for many years. At last he observed that the callosity at the margin of the fistula had begun to increase; and it went on increasing, so that it ultimately extended to the scrotum and penis. When we were called in, we found him with a malignant tumor, affecting the perineum, scrotum and penis, which had evidently had its origin in the fistula. He ultimately died in great distress and misery.



## LECTURE II.

*Stricture of the Urethra—continued.*

IF you consider the relations which the urethra bears to the prostate gland and bladder, you will not wonder that these organs should suffer in old and inveterate cases of stricture.

A chronic enlargement of the prostate gland is one of the most frequent changes with which the body is affected in old age; and it may take place in those who labor under stricture of the urethra as well as in other persons. There is, however, more than this merely accidental connection of the two diseases with each other; and those who have been long tormented with stricture are more liable to disease of the prostate, and are liable to it at an earlier period of life, than those in whom the urethra is free from obstruction. In a great number of instances, where the patient is somewhat advanced in years, when you have dilated the stricture, you find that the relief is incomplete, and remedies beyond those which the stricture itself demands are necessary to remove or palliate the symptoms produced by the disease of the prostate. I have already mentioned the dilatation of the ducts of the prostate, which is observed in some cases. Occasionally, where the urethra has been diseased for a long period, pus may be squeezed out of the dilated ducts. Circumscribed abscesses also form in the substance of the prostate, which, in some instances, burst and discharge their contents by the urethra, during the patient's lifetime; while in others their existence is not ascertained until an incision is made into the diseased gland in the examination of the body after death. It is not my intention at present to enter into the history of the additional symptoms which arise from this complication of disease of the prostate in old cases of stricture, since they do not materially differ from what we observe where the prostate is alone affected; to which subject I shall call your attention in a future lecture. The following observations, however, may be introduced now better than hereafter:—

1. Where a simple chronic enlargement of the prostate gland supervenes on stricture of the urethra, the latter usually becomes less liable to spasm, and is more easily dilated, and altogether more tractable than it was before; a change in its condition which is easily explained; as the pressure of the urine against the stricture when the patient strains in making water is a constant source of irritation, which is in a great measure removed as soon as a new impediment to the flow of the urine between the stricture and the bladder, is established by the tumor of the prostate.

2. But where the disease of the prostate goes beyond the mere enlargement, and suppuration has taken place in its substance, an opposite effect is produced on the stricture; the abscess itself becoming

a source of irritation, rendering the stricture more sensitive, and more liable to spasm than it would have been otherwise.

3. Although the combination of stricture with enlarged prostate is common enough, it is not so common as it is by some surgeons supposed to be. An old man, who has a frequent desire to void his urine, and voids it slowly and with difficulty, applies to a surgeon whose hand is light and accustomed to the use of the catheter. The instrument is then introduced readily, or, at any rate meets with no obstruction until it reaches the neck of the bladder, and the case is set down as one of enlarged prostate, which it really is. Another old man, under precisely similar circumstances, applies to a surgeon who uses the catheter rudely and incautiously. The urethra resents this rough usage; spasm is induced, and the point of the catheter cannot be passed further than the membranous part of the urethra. The case is then supposed to be one of stricture, and is treated as such: I need not tell you to how little purpose.

I have already mentioned that the bladder is rendered irritable in many cases of stricture of the urethra. In consequence of this, it is never properly dilated, and it becomes small and contracted. If the stricture be dilated before any further disease in the bladder is established, the latter is relieved, and soon regains its natural capacity. In many cases of old and neglected stricture, the mucous membrane of the bladder becomes affected with chronic inflammation. It secretes a ropy adhesive mucus, which clings to the bottom of the vessel which receives it; and sometimes this mucus is generated in such abundance as to obstruct the narrow orifice of the stricture, and add very much to the difficulty of making water. In such cases, if you examine the body after death, you find the vessels of the mucous membrane turgid with blood, and the whole membrane in consequence of a dark red color: and things may continue in this state, sometimes better and sometimes worse, for months, and even for some years.

I have met with several cases of stricture of the urethra in which the mucous membrane of the bladder was found, after death, not only inflamed, but encrusted, even over a large portion of its surface, with coagulated lymph. Such an effusion of lymph is the result of acute inflammation, differing in its character from the chronic inflammation, which produces merely a secretion of the vesical mucus; and it is observed chiefly (if not exclusively) when the patient has died after having been harrassed by repeated attacks of retention of urine.

There are other cases in which the bladder, instead of being contracted, is rendered more capacious than natural; the patient never emptying it completely. I have already explained that this condition of the bladder is often indicated by an involuntary discharge, or incontinence of urine. Here, when you have dilated the stricture, the symptoms are only partially relieved; and on introducing the catheter, you find a large accumulation of urine, which the patient was unable to void by his natural efforts. This particular symptom may occur where the stricture exists in combination with enlargement of the



prostrate; but it occurs also in old cases of stricture, independently of this complication.

In most cases of stricture, the muscular coat of the bladder is thicker and stronger than natural. This circumstance is easily explained. The bladder has been called on to make unusual exertions, and it is a law of the animal economy, that muscles which are unusually exercised shall become increased in bulk.

In some instances, the mucous membrane is protruded through some of the interstices of the muscular fibres, forming numerous small cysts, communicating with the cavity of the bladder. These cysts appear to be produced in the following manner:—when the patient strains in making water, the mucous membrane, while it is pressed on by the muscular fibres externally, has to sustain an equivalent degree of pressure on its inner surface from the reaction of the urine. Wherever there happens to exist a small interstice between the muscular fibres, the latter force alone operates, and the bulging outwards of the mucous membrane is the necessary consequence. These cysts, however, are not peculiar to cases of stricture of the urethra, and they occur equally where the obstruction to the flow of urine arises from an enlargement of the prostate gland, or from any other cause. A cyst being once established, continues to increase, and may ultimately attain a very large size. Many years ago I met with a case of long-neglected stricture of the urethra, in which, on examining the body after death, I found one of these cysts, interposed between the bladder and the rectum, at least equal in capacity to the bladder itself. Occasionally, as I shall explain to you more fully in a future lecture, a calculus finds its way into one of these cysts, increases in size, and becomes impacted in it. For the most part the contents of the cysts are similar to those of the bladder itself; but I shall have occasion hereafter to mention a case in which a large cyst of this description contained pure pus, while in the bladder there was nothing but urine.

In cases of stricture, where the disease has existed for many years, and nothing effectual has been done for its relief, abscesses form in the cellular membrane external to the bladder, but communicating with it, similar to those which I have already described as connected with the urethra. A considerable time elapses before such abscesses present themselves externally. They point at last in the groin, or above the pubes, discharging a putrid offensive pus in the first instance, and giving exit to urine afterwards. In Dr. Hunter's Museum (which is now in Glasgow,) there is a preparation exhibiting an abscess of this kind communicating with the bladder at the fundus, extending upwards in the course of the urachus, and opening externally at the navel. I believe that the formation of these abscesses is always preceded by chronic inflammation of the mucous membrane of the bladder, and their existence is marked by severe typhoid symptoms. For the most part they may be regarded as a sign of approaching dissolution.

Stricture of the urethra, as it impedes the flow of urine from the bladder, so it cannot but interfere, to a certain extent, with the passage

of urine into it. One result of this is, that the ureters, pelves of the kidneys, and infundibula become dilated, the glandular structure absorbed, and the whole organ converted into a membranous bag, divided by septa into different compartments, which, however, communicate with each other. The kidneys are also liable to be affected in other ways; but, to avoid a needless repetition, I may refer you for what I have to say on this subject to future lectures, especially to that on the diseases of the prostate gland.

I have said that rigors sometimes occur during the formation of urinary abscesses. In this there is nothing remarkable, as rigors mark the existence of suppuration under a variety of other circumstances. But rigors also occur in many cases of stricture independently of abscess. We meet with them most frequently in patients from hot climates. They usually recur at irregular periods, being in many instances brought on by the introduction of a bougie, or the application of caustic to a stricture. The paroxysm very nearly resembles that of an intermittent fever, and it is more severe when it follows the use of a bougie than when it occurs independently of it. In general, the cold fit having been followed by a hot fit, and that by a profuse perspiration, the patient is relieved. At other times, however, the constitution is disturbed by a great length of time afterwards; and sometimes the rigor is followed by an attack of continued fever, which lasts for some days, or even for some weeks. I met with a case in which a rigor followed the application of caustic to a stricture, and this was followed by an attack of mania, which (if my recollection be accurate) did not subside for nearly a month. Another patient had laboured under a stricture of the urethra for many years, during which no instrument had ever been made to enter the bladder. I succeeded in introducing a small gum catheter. Having emptied the bladder, I removed the catheter. In a few hours afterwards there was a severe rigor. An attack of fever ensued, attended with rheumatic inflammation of the muscles of the neck, from the effect of which the patient never entirely recovered, though he lived for many years afterwards.

It has been said that stricture of the urethra lays the foundation of disease of the testicle. The introduction of a bougie will sometimes induce acute inflammation of that organ, probably by irritating the *verumontanum* and the office of the *vas deferens*; and it is not improbable that chronic inflammation of the testicle may sometimes arise in the same manner. It appears to me, however, that the effects of a stricture on the testicle have been, by some writers, very much exaggerated. An hospital surgeon, who is now no more, published a work in which he expressed himself as if he regarded almost all cases of chronic inflammation of the testicle as being dependent on disease of the urethra, and not curable, except under the use of the bougies. I need make no comment on such a fantastic hypothesis.



*Diagnosis in Cases of Stricture of the Urethra*

I shall now suppose that a patient applies to you, believing that he has a stricture of the urethra. Perhaps you find on inquiry that the symptoms are equivocal; and you require something more than a mere knowledge of them to enable you to determine whether a stricture does or does not exist: or it may be that the symptoms are so distinct and well marked that you can have no doubt as to the existence of a stricture, but you wish to know in what part of the urethra it is situated, and what is the degree of contraction. The knowledge that is required in either of these cases, is to be obtained by the examination of the urethra with a bougie, or some other instrument corresponding to it.

The best kind of bougie is that in common use, made of plaster spread on linen, and rolled up. It should be smooth on the surface, and neatly rounded at the extremity. The plaster bougie should be rubbed until it becomes warm, so that it may be moulded by the hand, and bent into the form of the urethra. Thus bent, it is much to be preferred to the elastic bougie, which is made of elastic gum on the outside and of catgut within. The latter may, it is true, be bent into any form; but it is elastic, and however you may bend it, it always regains its straight figure, and hence it is not well constructed for being passed along the curved canal of the urethra. The bougie which is used for the purpose of examining the urethra should be of a full size, that is, large enough to fill the urethra without stretching it. A small bougie may deceive you in two ways: it may pass through a stricture, and thus lead you to believe that there is no stricture, when there really is one; or it may have its point entangled in the orifice of one of the mucous follicles of the urethra, or in some accidental irregularity of the canal, and lead you into the opposite mistake of supposing that there is a stricture where none exists. If you use a bougie of the size of the urethra, you are not at all liable to the first error, and you are much less liable to the second than you would be otherwise. The bougie should be cylindrical. There is no advantage in any bougie, except a very small one, being conical. A conical bougie, becoming larger towards the point, which is held in the hand, is likely to extend forcibly the orifice of the urethra, and to excite inflammation in it.

The existence of stricture in the anterior part of the urethra, or at its orifice, is so easily ascertained, that it seems unnecessary to offer any observations on the subject. The following rules, then, are to be considered as relating especially to those cases in which it is a question whether there be, or be not, a stricture in the membranous part of the urethra, or its immediate vicinity.

I generally find it best to introduce the bougie with the patient in the erect posture, keeping the extremity of it, which I hold in my right hand close to his groin, and passing it until it will go no further in that direction; after which, by turning the instrument, I bring it hori-

zontally forwards, and push it gently towards the bladder. If the patient has well-marked symptoms of stricture, and the bougie meets with an obstruction in some part of the urethra, you may be justified in considering this as sufficient to indicate the existence and situation of the disease. If, however, the patient has no such well-marked symptoms, you should not advance at once to the conclusion that there is a stricture because the bougie does not immediately enter the bladder. The extremity even of a large bougie may hitch in some irregularity of the mucous membrane; or if you are at all rough in the use of it, a spasm may be induced in the membranous part of the urethra, or in the muscle which surrounds it, preventing the bougie from being passed, although no such cause of obstruction exists at other times. Under these circumstances, you should introduce a silver catheter, or, what is better, a metallic sound, having a moderate curvature, and warmed to the temperature of the body; and it is probable that, if there be no stricture, the metallic instrument will be easily introduced, although the plaster bougie could not be introduced at all. In short, where there are no decided symptoms of stricture you ought not to adopt the opinion that a stricture exists, without having made a very careful examination of the urethra. Inattention to this rule has led to many patients being subjected to a course of treatment for stricture who had never labored under the disease.

There is a fashion in diseases, or rather, (to speak more properly) there is a fashion in the opinions entertained as to the prevalence of particular diseases, and when the attention of the medical profession and the public has been especially directed to a certain order of cases, such cases are almost invariably supposed to be much more common than they really are. A very few years ago it was so with respect to the disease which we have now under consideration. If a man had a troublesome gleet; if he had an indurated testicle; if he had a priapism at night; if he had a frequent inclination to void his urine; if he was impotent, or believed himself to be impotent; if the stream of urine was not perfectly cylindrical; or even if he was liable to an herpetic eruption on the prepuce; he was supposed by many surgeons to be laboring under stricture of the urethra, and was at once subjected to the unnecessary use of bougies. The number of persons who at this period were supposed to have a stricture of the urethra, and who really had no such disease, and many of whom had no disease at all, was not less than that of the young females who, at a still later period, have been the victims of another mischievous delusion, being laid up for years together on a sofa, under the supposition that they labored under disease of the spine or hip, when in reality they suffered only from hysterical pains and spasms, which air and exercise would have cured, but which confinement and nursing, and the attendance of physicians and surgeons, have only tended to aggravate. I dwell on this subject, because I am anxious that none of my pupils should fall into an error so discreditable to themselves, and so mischievous to society.



*Treatment of a Retention of Urine from Stricture.*

It frequently happens that when you are first called to a patient with a stricture of the urethra it is on account of his laboring under a retention of urine in the bladder. At all events, this, when it does occur, demands your first attention. Here the patient is in a state of immediate danger; and you are to stand between him and destruction. You have no time to pause, to deliberate, or to consult your friends or your books. Your patient is suffering torture; he and his friends are in a state of the greatest possible anxiety and alarm; and it is important that you should have a perfect knowledge of all the remedies which are likely to be useful, so that you may be enabled to make an immediate application of them for his relief.

You will observe that the causes of retention of urine are various. Stricture of the urethra is only one of them. The treatment which is applicable to a retention from one cause is not applicable to a retention from others. The observations which I am about to make relate exclusively to cases of retention from stricture: but even in these cases the immediate cause of the inability to void the urine is not always the same.

I have explained how it is that abscess is formed in the perineum. Here, in the first instance, there has been no absolute retention of urine. If there had been, instead of an abscess, there would have been an extensive extravasation of urine into the cellular membrane. But when an abscess is once formed in the neighborhood of the urethra, [and has attained a certain magnitude, it cannot fail to obstruct that canal, and, though not the consequence, may itself become a cause of retention of urine. This is especially liable to happen where the matter is pent up behind the deep-seated fascia of the perineum. To relieve the retention you must open the abscess. For what I have to say further on this subject, I may refer you to my next lecture.

A stricture at the external orifice, or in the anterior part of the urethra, is a much less frequent cause of retention of urine than a stricture which is situated at the membranous part. Here the stricture is not liable to spasm, and you can look only to its mechanical dilatation.

A small catgut bougie may generally be introduced into it. This may be followed by one of a larger size, and thus again by a straight metallic instrument larger still. This will enable the patient to void a portion, but not the whole, of his urine. The bougie or metallic sound must then be introduced again, and allowed to remain in the stricture until there is another impulse to make water, and this process must be repeated until the bladder is emptied.

But in the very great majority of cases the immediate cause of a retention of urine is a spasmodic affection of a stricture at the membranous part of the urethra; and it is to this class of cases that the observation which I have now to offer will especially relate.

I have heard it recommended, even by some experienced surgeons,

that in these cases you should bleed your patient, that you should direct him to be put into a warm bath, and that certain other means should be employed, before you attempt to relieve him by the introduction of a bougie or catheter. But this recommendation does not correspond with what my own experience would suggest. The cause of the retention is local, and in the greater number of cases you will succeed in enabling the patient to empty the bladder by mechanical means. The plan which I would recommend you to adopt is the following:—

Begin by taking one of the smallest gum catheters, which has been kept for a considerable time on a curved iron wire, and which retains the curved form after the wire is withdrawn. Introduce it without the wire; and, as it approaches the stricture, turn the concavity of the catheter towards the pubes, elongating the penis at the same time by drawing it out as much as possible. It is not very improbable that it will pass through the stricture, and enter the bladder. The urine will then flow through it in a fine stream, and the patient will obtain immediate and complete relief.

If you fail with the small gum catheter, try, not a plaster, but a small catgut bougie. Let this be well made; that is, firmly twisted, nicely rounded at the extremity, and every where well polished. Observe the same rule of elongating the urethra, and it will probably enter the stricture. It is not necessary that the catgut bougie should pass on to the bladder; it is sufficient if the stricture grasps, or holds it. Let it remain in the stricture until there is a violent impulse to make water. Then withdraw the bougie, and the urine will follow it in a small stream. If the patient empties the bladder, the object is attained; but, otherwise, re-introduce the catgut bougie, or rather introduce another of the same size (for a catgut bougie which has been once used is not fit to be employed a second time); and let the patient retain this second bougie as long as he can. If the straight catgut bougie cannot be passed, you will often succeed in effecting its introduction by bending the point of it thus:—



This contrivance enables you to keep the point sliding against the upper surface of the urethra, avoiding the lower part, in which the obstruction is always most perceptible, in which the bougie is most likely to become, as it were, entangled.

Even where you have failed to relieve the patient by means of the catgut bougie, you will often succeed in introducing a silver catheter, or an elastic gum catheter mounted on a firm iron stilet, into the bladder. The catheter employed on this occasion, if the stricture be of recent formation, should be nearly of the full size of the urethra; but



if the stricture has been of long duration, it should be considerably smaller. The common silver catheter is not so well adapted for the purpose as that which I now show you. You will observe that it is shorter and less curved than usual; and that it is fixed in a wooden handle, which renders the instrument more manageable than it would be otherwise. If you use an elastic gum catheter, the iron stilet should have a flattened handle, resembling that of a common sound. You should pass it as far as the obstruction, and having ascertained where it is situated, withdraw the catheter a little, a quarter of an inch for example, and then, as you pass it on again towards the bladder, keep the point sliding against the upper part of the urethra, which is towards the pubes, avoiding the lower part, which is, of course, towards the perineum. Be careful to employ no violence. If you lacerate the urethra, so as to cause hæmorrhage, you will be defeated in your object. Press the catheter firmly, but gently and steadily against the stricture, keeping in your mind the anatomical position of the parts, and being careful to give the point of the instrument a right direction. When the pressure has been thus carefully continued for some time, the stricture will begin to relax. It will allow the point of the catheter to enter, and, at last, to pass completely through it into the bladder. In some instances this will be accomplished in the space of one or two minutes; while in others it may be necessary to persevere for a quarter of an hour. As soon as the catheter has reached the bladder, the patient's sufferings are at an end, as the bladder becomes completely emptied. If you have used the elastic gum catheter, it may be prudent to allow it to remain in the urethra and bladder for one or two days, or even for a longer period; and this will go far towards accomplishing the cure of the stricture.

If you are skilful and prudent in the management of the catheter, you will generally succeed in introducing it into the bladder; but if you fail in doing so, the attempt to introduce it may still be useful to the patient. The pressure of the catheter against the stricture, if kept up for a considerable time, exhausts the morbid irritability of this diseased portion of the urethra. The spasm becomes in a considerable degree relaxed, and if you withdraw the instrument when the patient has a violent impulse to make water, the urine will follow in a stream. Observe, that I am taking it for granted that you are careful to avoid all violence. If the membrane of the urethra be lacerated, the probability is, that the spasm will not give way; and if, under these circumstances, you persevere in the attempt to introduce the catheter, you will but aggravate the evil which it is your object to remove.

The remedy on which you are most to rely, where these mechanical means fail, is opium. From half a dram to a dram of laudanum may be given as a clyster in two or three ounces of thin starch. If this should not succeed, give opium by the mouth, and repeat the dose, if necessary, every hour until the patient can make water. According to my experience, the cases in which the stricture does not become relaxed under the use of opium, if administered freely, are very rare. The first effect of the opium is to diminish the distress

which the patient experiences from the distention of the bladder. Then the impulse to make water becomes less urgent; the paroxysms of straining are less severe and less frequent; and after the patient has been in this state of comparative ease for a short time, he begins to void his urine, at first in small, but afterwards in larger quantities.

It is customary in these cases, to employ the warm bath. It is, indeed, sometimes useful, but you can place no dependence on it as compared with opium. It is not sufficient that your patient should sit in a hip bath: the bath, to be at all efficient, must be complete; his whole person ought, therefore, to be immersed, and he should remain in it for half an hour, or an hour, or longer, unless he previously becomes faint. Bleeding from the arm is seldom required in cases of retention of urine from stricture; but, in some instances, even where other means have failed, taking blood from the perineum by cupping gives immediate relief.

Purgatives require some time to produce their effect, and, in most cases, at the period of your being called in, the symptoms are too urgent to admit of this delay. Where, however, a stricture is chiefly spasmodic, and the retention follows the too great use of fermented liquor or spirits, I would advise you, if you are sent for on the commencement of the attack, to prescribe a draught of infusion of senna with the tartrate of potass and tincture of jalap. As soon as this has fully operated, and the bowels are emptied, give thirty or forty drops of tincture of opium by the mouth, or order an opiate clyster to be administered, and, in all probability, the attack will subside.

After all, there is no absolute rule as to the treatment of retention of urine from stricture. One person is relieved in one way, another in another; and you will do well in each case to bear in mind the particular mode of treatment which has proved of service, in order that you may at once resort to it, if you are called a second time to the same patient, under the same circumstances. In one instance, you will be able to pass a catgut bougie, and not a catheter; in another, you will be able to pass a catheter, and not a catgut bougie. One individual is relieved by opium, another by the warm bath. A gentleman of my acquaintance, who was subject to attacks of this description for a considerable time, almost always began to make water after a pint of warm water had been thrown up as a clyster. To show what various treatment is necessary, I have been in the habit of mentioning the following case. A gentleman, who had been long in hot climates, labored under an old stricture of the urethra. He was able to pass a bougie for himself; and he did this at regular periods, and for a long time experienced little or no inconvenience from his disorder. One night, however, he was seized with retention of urine, and called me out of my bed in consequence. I introduced a gum catheter, which entered the bladder with perfect ease, and drew off the urine. He called me up another night, and another, and another still; and one night he called me up twice. At last, it occurred to me that he always sent for me on the alternate nights; and on inquiry, I found that the attack of retention regularly came on about twelve o'clock, and even though the catheter had entered the bladder, the spasm did not relax,



so as to enable him to make water by his own efforts, until five or six in the morning. I determined then to treat the case as we do many other intermitting and periodical diseases; and I prescribed him the sulphate of quinine. The first night after he began to take it he had an attack of retention; but he had no attack afterwards.

Now let us suppose a case in which you have tried all the methods which I have described to no purpose. The bladder becomes more and more distended, the patient's sufferings go on from bad to worse. Are you to leave him to suffer and die? By no means. You may puncture the bladder itself, or you may make an opening into the urethra, behind the stricture, and thus prevent the catastrophe which would be otherwise inevitable.

Four different operations have been proposed for the purpose of drawing off the urine, when it cannot be voided by the natural passage. The bladder may be punctured above the pubes, or from the rectum, or from the perineum; or the urethra itself may be punctured between the stricture and the prostate.

It is not my intention at present to enter into a detailed history of each of these operations; but I shall nevertheless offer a few observations respecting them. You may prefer one operation to the other; but you will not be able in practice to resort to one exclusively. Your choice must be influenced by the particular circumstances of each individual case. If the patient be thin, and the bladder be much distended, you may puncture it above the pubes; but if the patient be corpulent, this operation will be difficult; and if the bladder be contracted, it will be impracticable. If the bladder be much distended, and the prostate gland be of its natural size, you may puncture it from the rectum; but if the distention be inconsiderable, or the prostate gland be enlarged, this operation will be at the same time difficult and dangerous. The puncture of the bladder from the perineum is so serious and severe an operation, and attended with so great a chance of mischief, from the effusion of urine into the loose cellular texture, that no surgeon of the present day, as far as I know, ventures to recommend it. The puncture of the urethra from the perineum in thin persons, where the parts to be divided are not altered from their natural structure, is a sufficiently simple and unobjectionable operation. The staff introduced into the urethra shows the situation of the stricture. The membranous portion of the urethra is situated behind the stricture, and below the symphysis of the pubes; and the bulging of the urethra, as the urine is driven into it when the patient strains, points out the exact spot at which it may be opened. But it may be that the patient is a fat person, with a deep perineum; or that the parts in the vicinity of the stricture are in a state of gristly induration; or that the perineum has been at a former period the seat of abscesses and sinuses; or that such sinuses exist at the present moment: and any one of these circumstances will be sufficient to make the operation perplexing and difficult even to the best anatomist. On the whole, from what experience I have had on the subject, I am inclined to believe that the puncture of the bladder from the rectum is applicable to a greater num-

ber of cases than any other operation. In proper cases this operation is free from pain and danger, and it has the advantage of simplicity, being performed at once without difficulty. The trocar having been withdrawn, the canula should be allowed to remain in the rectum and bladder for one or two days. By the time that it is removed, the sides of the wound will have become agglutinated, and it may perhaps continue as a fistulous communication between the bladder and rectum until the stricture is cured. At least this happened in one instance; and thus I was enabled to cure one of the most distressing cases of stricture which I ever had under my care. The patient was a middle-aged gentleman, who had labored under the disease from his boyhood. The use of the bougie induced a secretion of ropy mucus in such quantity as to fill up the urethra, and to be in itself a material impediment to the passage of the urine, and not unfrequently it occasioned a complete obstruction of the urethra, and a retention of urine. In one of these attacks of retention, I punctured the bladder from the rectum, and the wound, as I have mentioned, became fistulous. Now, whenever the stricture was more close than usual, the bladder was relieved through the fistulous passage, and the urine came away by the rectum. The secretion of the ropy mucus ceased: there was no recurrence of the retention of urine. Nothing now interfered with the necessary operations on the urethra, and the dilatation of the stricture was easily accomplished.

It may be further observed respecting this operation of puncturing the bladder, that it is impossible to lay down any general rule as to the period beyond which it ought not to be delayed. You must exercise your own judgment, taking into consideration all the circumstances of the particular case before you. Sometimes there will be no reason for resorting to it until after the lapse of three or four days; and at other times it ought to be performed within thirty-six hours, or even sooner.

After all, however necessary it may be to the safety of the patient in some instances, it is an operation that is very rarely required. Surgeons who see a great number of cases of retention of urine, may, in the course of their lives, be called on to perform it in a *few* instances. Those who perform it frequently, must often perform it unnecessarily; at least this is what I should say, judging from my own experience.

Where the urethra has given way behind the stricture, and the urine has become effused into the cellular texture, very prompt and vigorous measures are necessary: delay is fatal. I remember the time when five out of six of those patients, in whom this mischief took place, perished; but now, from the more active treatment employed, under the hands of a well-informed surgeon the great majority recover.

I have already mentioned, that the escape of the urine is followed by a relaxation of the stricture. You will probably, now be able to introduce a catgut, or some other bougie (a catgut is to be preferred) through the stricture into the bladder. If you can do so, it is so much the better. Introduce the bougie; let the patient be



held in the position in which you would place him for lithotomy; make an incision in the perineum; feel for the catgut bougie, make an incision on it, and, of course, you make an opening in the urethra. Through this opening, the catgut bougie serving you as a director, introduce a short gum catheter from the wound in the perineum into the bladder. You will generally find, although the effusion of urine has taken place, that there is still a large quantity of urine left in the bladder. Of course it is drawn off by the catheter, and the bladder is emptied. Allow the catheter, however, to remain in the wound and in the bladder. Then make extensive scarifications or incisions through the skin, wherever the urine has been effused underneath, and let these incisions extend to the sloughs of the cellular membrane. Apply a poultice: let the parts be fomented twice or three times daily. After one or two days, you may remove the short gum catheter, which, in the meantime has kept the bladder empty. Your treatment of the patient, in other respects, must depend on his symptoms and general condition. At first, it is often right merely to give some saline medicine, with small doses of Dover's powder every six or eight hours: afterwards it will be proper to exhibit wine, ammonia, opium, and, perhaps, bark, or the sulphate of quinine: in other cases opium, cordials, and tonics will be required in the beginning. As soon as the sloughs begin to separate, remove them with a pair of forceps, and dress the sores according to circumstances.

In those cases of effusion of urine in which you are unable to pass an instrument into the bladder, you must be contented (as to the local treatment) with making a free incision in the perineum, and extensive scarifications in the neighborhood. Here the patient labors under a disadvantage, in consequence of the bladder remaining loaded with urine; but nevertheless, if the scarifications are made at an early period, he usually recovers.

---

### LECTURE III.

#### *On the Cure of Stricture of the Male Urethra.*

A STRICTURE at the orifice may be dilated by means of a common bougie, or a short metallic instrument; the size of the bougie being gradually increased, and the introduction being repeated daily or on the alternate days, according to circumstances. The process of dilatation is, however, in many instances, attended with much inconvenience to the patient. In those cases, especially, in which the contraction began in early life, every introduction of the bougie causes considerable pain; at the same time that the disposition to contract is so great that the operation requires to be repeated almost daily. The consequence is, that the part is kept in a constant

state of inflammation, and, between the disease and the remedy, is a source of constant annoyance to the patient. Under these circumstances another mode of treatment may be had recourse to, as in the case which I am about to mention.

A gentleman, thirty years of age, consulted me on account of a difficulty of making water, under which he had labored since he was a child. The difficulty had increased by slow and almost imperceptible degrees, until at last, about fourteen months before he applied to me, he had a complete retention of urine. A surgeon, whom he then consulted, found the obstruction to be confined to the orifice, and that part of the urethra which is surrounded by the glands; and he relieved him without difficulty by means of a short and small bougie. This relief, however, was only temporary, and it was found necessary to have recourse to the use of the bougie almost daily; and even then the patient was not able to void his urine without considerable difficulty. An attempt was therefore made to dilate the orifice further by means of larger bougies. But that treatment was productive of considerable inconvenience, and when the patient was under my care, the orifice of the urethra was tender and inflamed; the mucous membrane immediately within it seemed to be in a state of ulceration; and not only the insertion of the bougie, but the contact of the urine always occasioned no trifling degree of pain.

It was evident that something more must, if possible, be done for the patient's relief; and accordingly, I determined at once to divide the contracted part of the urethra. This was easily accomplished by means of a pair of knife-edged scissars, one blade with a blunt point being introduced into the urethra, and the division being made in the situation of the frænum. No hæmorrhage followed the operation. A piece of lint was kept between the cut surfaces to prevent their re-union, and in about ten days they were cicatrized, being covered by what had already assumed a good deal of the appearance of a mucous membrane.

Strictures in the anterior part of the urethra, but behind the orifice, require to be mechanically dilated, by the introduction of bougies or metallic instruments. At all events, I know of no better method of treatment; and sometimes the patient obtains relief on very easy terms, the dilatation being readily accomplished, and the use of a bougie once in three or four days being sufficient to prevent a recurrence of the contraction. At other times, however, the disposition to contract is so great, that it becomes necessary to introduce the bougie once or twice daily; and, indeed, I have known cases in which the patient was seldom able to expel his urine until the bougie had been employed.

The simple rules which have been just laid down are not sufficient for the treatment of strictures at the bulb of the urethra. The circumstances of these being situated where the curvature of the urethra begins, at a distance of six or seven inches from the external orifice, and their liability to spasm, distinguish them from



strictures in the anterior part of the canal. The management of them requires greater skill, attention, and experience on the part of the surgeon; but, at the same time, it must be acknowledged that it leads, on the whole, to more satisfactory results than that of strictures, which take place elsewhere.

If you were to ask me, How then do you treat strictures at the bulb of the urethra? my answer would be, I have no particular method: sometimes I adopt one method, sometimes another, according to the peculiar circumstances of the case. I shall describe the different plans of treatment to which you may have recourse, at the same time endeavoring to point out the particular class of cases to which each of them is applicable.

I should premise that the disease is not to be cured by medicines; though medicine may sometimes be used with advantage in aid of the local treatment. Thus, where the liability to spasm is increased by a too abundant secretion of lithic acid by the kidneys, whether it shows itself in the form of red sand, or of small calculi; or of lithate of ammonia, attention to the diet and mode of life, and the exhibition of purgatives and alkalis, and such other remedies as may tend to restore the urine to a healthy condition, will be of essential service, and will enable you to accomplish, by means of the bougie, what you would in vain have attempted to accomplish otherwise. In like manner, in cases of alkaline urine, a generous diet, and the exhibition of mineral acids, opiates, and tonics, will be productive of a similar advantage. In all cases attention should be paid to the state of the bowels, and the patient should be made to understand that a careful and regular mode of life in every respect is necessary to his recovery; and that violent bodily exercise, especially riding on horseback, is always to be avoided. In long-standing cases of unusual difficulty and complication, I have sometimes found it necessary to keep the patient confined to a sofa, or even to his bed, for some days before I began the peculiar treatment which his case required. Where, before the patient comes under your care, instruments have been much employed, without having penetrated through the stricture, it is always desirable that the urethra should be left for some time in a state of repose. At the end of a month or six weeks, the false passage (if any existed) may have healed; the inflammation produced by previous operations may have subsided; and you will begin the treatment under much more advantageous circumstances than if you had entered upon it in the first instance.

The methods which are chiefly useful in the case of stricture at the bulb of the urethra, are:—1st, the dilatation of it by means of the common plaster bougie; 2dly, the dilatation of it by means of a metallic bougie, catheter, or sound; 3dly, the retention of the elastic gum catheter in the urethra and bladder; 4thly, the application of the bougie armed with the nitrate of silver.

1. The common plaster bougie, if of a small size, should be of a conical shape: but if of a middle size, or of a full size, it should

be cylindrical. Ascertain the size of the stream of urine, and introduce a bougie of this size, whatever it may be. If the bougie be very small, it may be used straight, otherwise it should be curved like a catheter, but in a less degree. Neither you nor your patient are to be disappointed because the bougie does not enter the stricture at the first trial. In many cases this will not happen until you have seen your patient three or four times; and in very difficult cases the delay may be still greater than this. When a bougie has once entered the stricture and bladder, allow it to remain for a few minutes. In two or three days (not sooner) introduce either the same bougie, or one of the same size. Then withdraw it, and introduce one of a size larger. Allow this also to remain for a few minutes, and after two or three days more repeat the operation. Thus, by degrees, you dilate the stricture until it is of the same diameter with the rest of the urethra. This method of curing strictures is applicable to a great number of cases; and, wherever it will answer the purpose, I would advise you to resort to it in preference to other methods. The common bougie gives the patient little or no pain; it excites no irritation, unless it be introduced clumsily or rudely; and it can do no harm by penetrating or tearing the membrane of the urethra.

II. The metallic instruments which I am in the habit of employing are not those which are sold under the name of the flexible metallic bougies. These are liable to lose the shape which you have given them during their introduction, and, in fact, are at the same time too flexible and too inflexible for any useful purpose. Those which I have, if of a small or middle size, are made of solid silver; the larger ones of silver or steel, or steel plated, or of a composition similar to, but firmer than, that of the flexible metallic bougie. These sounds should be very slightly curved, and for ordinary cases not more than eight inches and a half or nine inches long, exclusive of the handle. You may use them as you would use the common bougie for the purpose of gradually dilating the stricture, beginning with one of a small size, and gradually proceeding to those which are larger. Sometimes you will find it best to introduce the sound without turning, that is, with the concavity towards the patient's abdomen; at other times you will pass it more readily by keeping the handle, in the first instance, towards the patient's left groin, turning the instrument afterwards as it approaches the stricture. In either case if you wish to avoid making a false passage, take care that the point is kept sliding, as it were, against the upper part of the urethra. Press the instrument firmly, but gently; against the stricture, in the expectation that it will gradually become dilated, and allow the point to enter; then depress the handle and pass it into the bladder, provided that you can do so readily, and without the application of force; but not otherwise. Two or three days afterwards (and the interval ought to be never less than this, and sometimes it ought to be greater), introduce the sound which has been passed before, withdraw it and introduce



another of a size larger, and thus go on dilating the stricture until that part of the urethra has regained its natural diameter. If in the course of these proceedings you are in doubt whether the sound has reached the bladder or not, you may easily determine the point in question by introducing a catheter. You might, indeed, use the catheter from the beginning, but that the openings near the point, and its comparative lightness, render the introduction of it less easy than that of the solid instrument.

This method of treatment is applicable to a large proportion of the cases which you will meet with in practice: 1st, to those of old and indurated strictures, which the common bougie is incapable of dilating; 2dly, to those in which, in consequence of some improper management, a false passage has been formed, into which the point of a common bougie will easily penetrate, but which an inflexible instrument may be made to avoid; 3dly, to those in which, from long-continued disease, and without any previous mismanagement, the urethra has become distorted, and its surface irregular; and, 4thly, to several recent cases in which the smooth polished metallic surface gives less pain to the urethra, and is less likely to induce spasm, than the softer but less smooth surface of a common bougie. The temper of the urethra varies as much as the temper of the mind. Where circumstances seem to be nearly the same, you will find one method of treatment to suit one case, and another to suit another case; and it will often happen that you cannot determine beforehand which method it will be best to adopt.

But the treatment which I have just described is not applicable to the most difficult class of cases which you will meet with in practice. In using a small metallic instrument, there is always a great risk that it may penetrate the membrane of the urethra, and make a false passage, instead of entering and dilating the stricture; and, therefore, in a case in which a stricture has been long neglected, and is reduced to a very narrow diameter, some other mode of proceeding is required. You may try a small plaster or catgut bougie first, and defer the use of the sound until the stricture is so far dilated as to justify the expectation that one of a moderate size may be passed. If this cannot be accomplished, you may resort to another method, which will rarely fail. In speaking of the use of the silver catheter, where the patient labors under a total retention of urine, I said: "Press the catheter firmly and gently against the stricture, keeping in your mind the anatomical position of the parts, and being careful to give the point a right direction. When the pressure has been thus carefully continued for some time, the stricture will begin to relax, allowing the catheter to enter," &c. &c. Now, in attempting the cure of old and inveterate cases of stricture, you will often find it convenient to act on the same principle, and in very many of them you will find this mode of treatment to be successful, where all others have failed. The sound should be rather above than below the middle size. Of course the same rule in this respect does not apply in every instance, but that which I

generally find it most convenient to employ, has only a moderate curvature. It is made of silver, fixed in a flat wooden handle, being nine inches in length from the handle to the point; no part of it is more than one-fifth part of an inch in diameter, and at the point the diameter is reduced to one sixth of an inch.

In using the sound you should pass it carefully as far as the stricture, and then press the point firmly and steadily against it, taking care that it is directed in the line of the urethra towards the bladder. The pressure is to be continued for five, ten, or fifteen minutes, or even longer, according to circumstances; and this process is to be repeated once in two or three days. If a false passage exists, it is probably on the lower part of the urethra towards the perineum; and it is in this situation that, by careless management, one may be easily made. To avoid this mischief, you must direct the point of the sound especially to the upper part of the stricture next the pubes. The pressure should be as much as can be made without the urethra being lacerated, and without inducing any considerable degree of pain. In some instances the stricture has little or no sensibility, in others it is exquisitely tender; and in the latter cases the pressure should be very trifling at first, but it may be gradually increased as the tenderness subsides (as it will do) under its influence.

The result of this treatment is, that at each operation the anterior part of the stricture seems to become relaxed to a greater or less extent; and that at last the instrument penetrates entirely through it and enters the bladder. The period at which this happens, of course, varies in different cases. The permanent change of structure may be trifling, the stricture being chiefly spasmodic, and one or two applications of the sound may be sufficient. There may be much gristly induration, occupying a considerable portion of the urethra, and many applications may be required. A patient was under my care, in whom the stricture was surrounded by a mass of hard substance, which could be distinctly felt in the perineum, apparently an inch or an inch and a half in length. The stream of urine was of the smallest size, and varied so little that it was evident that there was little or no liability to spasms. For many years before I was consulted, no instrument had been made to enter the bladder; and the ordinary methods, after a long trial, failed in my hands, as they had done in those of others. At last I succeeded by the method which I have just described, but not till I had persevered in it for many months.

III. In treating a stricture of the urethra with the gum catheter, you are to introduce it, and allow it to remain day and night in the urethra and bladder. If the patient can bear it to be retained for a sufficient length of time, the stricture will become dilated not only to the size of the instrument employed, but to a size considerably larger. Perhaps you will be able to introduce the catheter without the wire or stilet. Do so, if possible. If not, you should employ one mounted in the way which I have already explained,



on a strong, unyielding iron stilet, having a flattened iron handle like that of a common sound or staff. Being so mounted, it is more readily directed into the bladder than when mounted in the usual way, on a piece of thin flexible wire. When the gum catheter has entered the bladder, withdraw the stilet, and leave the catheter, with a wooden peg in its orifice, which the patient is to take out, whenever he has occasion to void his urine, it being at the same time secured by a suitable bandage. After three or four days you may withdraw the catheter for twelve hours; or if much suppuration be induced in the urethra, you may withdraw it for a longer period. Then introduce another catheter larger than the first; and thus you may, in the course of ten days or a fortnight, dilate a very contracted urethra to its full diameter. This is a very certain and expeditious method of curing a stricture. You may by these means sometimes accomplish as much in the course of ten days, as you would accomplish in three months by the occasional introduction of a bougie. This method is particularly applicable,—

1st, Where time is of much value, and it is of great consequence to the patient to obtain a cure as soon as possible.

2dly, Where a stricture is gristly and cartilaginous, and therefore not readily dilated by ordinary methods.

3dly, Where, from the long continuance of the disease, the urethra has become irregular in shape, or where a false passage has been made by previous mismanagement. Under these circumstances, if you can succeed in introducing a gum catheter, and let it remain for a few days in the bladder, you will find your difficulties at an end; the irregularities will disappear, and the false passages will heal.

4thly, There is still another class of cases, in which this method of treatment is particularly useful. I allude to those in which a severe rigor follows each introduction of the bougie. This disposition to rigor is such, that it is sometimes impossible to proceed with the treatment in the ordinary way. Observe, in these cases, when the rigor takes place. It seldom follows the use of the bougie immediately. It almost always occurs soon after the patient has voided his urine, and seems to arise, not as the immediate effect of the operation, but in consequence of the urine flowing through the part which the bougie has dilated. Now, if, instead of a bougie, you use a gum catheter, and allow it to remain, the urine flowing through the catheter, the contact of it with the urethra is prevented, and the rigor is prevented also. I have no right to say that this plan will invariably succeed, but I do not remember that it failed in a single case among many, in which I have resorted to it.

IV. It remains for us to consider the treatment of a stricture by the application of caustic. This mode of treatment was first proposed by Mr. Hunter, who recommended it in particular cases. The more general application of the caustic to strictures was introduced by Sir Everard Home, with whose work on the subject of this diseased you ought to be well acquainted. The caustic to be employed is the nitrate of silver. Let a cylindrical piece of it be

inserted neatly into the extremity of a bougie. The round end of the bougie should be cut off, and the caustic should be as large as the bougie will carry; and the bougie itself should be as large as the urethra will admit without being forcibly distended. First, pass a common bougie down to the stricture, and mark with your nail on the bougie the distance of the stricture from the external orifice of the urethra. Then measure off the same distance on the armed bougie; pass it down to the stricture, and keep it pressed against it with a firm, heavy hand, during the space of a quarter of a minute, and sometimes for a longer time. Let this be repeated, if necessary, every third or fourth day; for every second day, as some have recommended, is, according to my experience, much too often. I have advised that you should press it firmly against the stricture, as otherwise the caustic is applied to the urethra anterior to the stricture, and not to the stricture itself. The first effect of the caustic is to cause the stricture to become dilated to a certain extent, probably by relieving whatever disposition there is in it to spasm. It is a strong stimulus applied to a part which is morbidly irritable, and the morbid irritability becomes exhausted. The benefit which the patient derives immediately from the application of the caustic, is sometimes very remarkable. He may apply to you, making water in a stream like a thread, or only in drops; you apply the caustic, and in a few minutes afterwards he has a desire to discharge the contents of his bladder, and he finds that the urine flows in a very considerable stream. After this, any further benefit to be produced by the caustic must be the result of the destruction of the stricture, by the repeated formation of sloughs. But this is a tedious and difficult process, especially in cases of old cartilaginous stricture. In fact, there are very few such cases, in which a cure can be effected by the caustic alone, however long you may persevere in its use; and whenever the caustic is frequently employed, you are in danger of creating a false passage, in consequence of the dissolved caustic flowing to the lower part of the urethra, and destroying the parts unequally.

The cases to which this method of treatment is applicable, are, 1st, Those of spasmodic stricture, where two or three applications of the caustic may be sufficient to relieve all the urgent symptoms. 2dly, some cases of old stricture, in which there still is a considerable disposition to spasm. In these last cases, apply the caustic two or three times, and no oftener. It will probably relieve the contraction as far as it is spasmodic, and thus enable you to proceed more advantageously with the use of the bougie or metallic sound. 3dly, The caustic may be used very properly in some cases of stricture which are endowed with peculiar irritability, in which every application of the common bougie induces severe pain, or brings on spasm, preventing it entering the stricture. Two or three applications of the caustic may be sufficient to deprive the stricture of that unnatural sensibility, which otherwise would have foiled your efforts to effect a cure.

Notwithstanding what I have now stated, I very rarely use the armed bougie in my own practice, and I never resort to it in the first instance.



My reasons for preferring the other methods of treatment, in ordinary cases, are these: 1st, Although the caustic often removes spasm, it also very often induces it. It is true, that in many instances it enables a patient to make water with more facility; but in many instances, also, it brings on a retention of urine. 2dly, Hæmorrhage is a more frequent consequence of the use of the caustic than of the common bougie, and it sometimes takes place to a very great, and to an almost dangerous extent. 3dly, Where there is a disposition to rigors, the application of the caustic is almost certain to produce them; and frequently the application of the caustic induces rigors, where there had been no manifest disposition to them previously. 4thly, Unless used with caution, the application of caustic may induce inflammation of the parts situated behind the stricture, terminating in the formation of abscess. I have known of some cases of abscesses formed under these circumstances, which, from their peculiar situation, have proved more troublesome and more difficult to manage than the original disease. In one case, which came under my observation many years ago, and in which, from the account given me, I was led to believe that a surgeon had been too liberal in his application of caustic to a stricture, a succession of abscesses took place, extending in various directions, even to the nates, and attended with great disturbance of the constitution. The patient went into the country, where, as I have been informed, he ultimately sunk under the combined effects of the stricture and abscesses.

These are the principal evils which follow the use of the caustic; but there are other arguments against it in particular cases. If the bougie has been improperly used, and a false passage has been produced, or if there be the beginning of a false passage, the dissolved caustic will penetrate into this false passage, and aggravate the mischief instead of destroying the stricture. In cases of old stricture, where there is much alteration in the structure of the parts, the caustic is absolutely inadequate to the cure; and in many other cases, although the caustic may effect a cure at last, it does so by a very tedious process; and a cure would be effected in a much shorter space of time by the introduction of the metallic sound, or the retention of the gum catheter.

There is still some other methods of treating stricture, but what I have to say concerning each of them may be comprised in a few words. Mr. Arnott has invented what he calls a dilator, made of a tube of varnished silk, which is to be introduced into the stricture, and then dilated by impelling air into it with a syringe. The contrivance is ingenious; and I should think it very likely to be useful, where you wish to dilate the female urethra for the purpose of extracting a calculus. It may be useful also, in dilating the orifice of an abscess or sinus, being used instead of a sponge tent. But it does not appear to me that either this, or a steel dilator, which I remember some one to have invented formerly, is likely to render us much assistance in the cure of a stricture. Such a dilator, must be of a certain size. It cannot be supposed to be less than a

middle-sized bougie. Now, if you can manage to introduce a bougie, or sound of a middle size into a stricture, the farther dilatation of it is easy enough, the cure may be said to be all but accomplished, and neither of the dilators is wanted. On the other hand, if the stricture be much contracted, the introduction of the dilator will be impossible. It is stated by Mr. Arnott, that the method proposed by him has this advantage, that it enables you to carry the process of dilatation farther than it can be carried by a bougie or scund, and that such farther dilatation removes the disposition in the urethra to contract, and thus produces a permanent cure of the stricture. I am by no means satisfied as to the correctness of the first of these assertions; and as to the second, it is entirely contrary to my own experience of the effects of very large bougies. I have generally observed, that the dilatation of a stricture beyond the natural size of the canal is followed by pain and inflammation, and an aggravation instead of a diminution of the complaint.

Mr Stafford has invented an ingenious machine, which is intended to divide a stricture by means of a cutting instrument. If any cases occur in which this method may be useful, they are undoubtedly very few in number; and great caution must be required, to avoid making false passages, which might be followed by effusion of urine and purulent deposits. There is, however, a modification of this practice which is free from these dangers, and which may be resorted to in certain cases, with great advantage, as I shall explain presently.

It has been proposed, in cases of very old stricture, to make an incision in the perineum, so as to expose the whole of the contracted part of the urethra, and to divide the stricture with a knife, introducing a gum catheter afterwards through the urethra into the bladder, and allowing the wound to heal over it. I have performed this operation myself in one instance, and with success; and I have heard of it being performed several times by others. In the greater number of cases (according to the reports which I have received), it has been performed with difficulty, and in some instances the patient has been sent to bed without it having been completed. Even under the most favorable circumstances, it cannot be otherwise than doubtful whether the stricture be properly divided, that is, whether the incision has passed through the narrow canal in the center, or through the solid substance on one side. I suppose that no surgeon would recommend such an operation except as a last resort, where no instrument could be made to pass through the stricture by other means. But such cases of impenetrable stricture are of very unfrequent occurrence; and where they do occur, I am much mistaken if the modification of Mr Stafford's operation, to which I have already alluded, will not effect a much easier and safer method of cure. In the following case (the only one in which I have had recourse to it) it succeeded perfectly:—

A man, forty years of age, was admitted into St. George's Hospital, in the year 1835, laboring under a stricture, near the bulb of the urethra, complicated with a fistulous opening in the perineum. When he voided his urine, a very small quantity came away by the urethra,



the greater part being discharged by the perineum. The disease had existed for more than twenty years, and the abscess in which the fistula had originated had followed an injury received while riding on horse-back thirteen years ago. For many years no instrument had been passed through the stricture. At last he became a patient under the late Mr. Earle, in St. Bartholomew's Hospital, where he remained under treatment for five months, but with no more success than formerly.

Finding after repeated trials that the instrument could be made to penetrate through the stricture, with the concurrence of my colleagues, I performed the following operation:—

The patient having been placed in the same position as in lithotomy, a full-sized plaster bougie was introduced, and held by an assistant with its extremity resting against the stricture. I then made an incision in the perineum, dilating the fistulous sinus, and laying open the membranous part of the urethra as far forward as the stricture, the exact situation of which was marked by the bougie. The bougie was then withdrawn, and an instrument was introduced in its place, consisting of a straight silver tube, closed at its extremity, except a narrow slit, through which a small lancet could be made to project by pressing on a stilet which projected the handle of the instrument. The round extremity of the tube being pressed against the anterior part of the stricture, I applied the fore-finger of the left hand, introduced through the wound in the perineum and urethra, to its posterior surface. The pressure of the instrument being distinctly communicated to the finger through the substance of the stricture, the lancet was protruded, and the stricture was divided. A silver catheter was then easily introduced through the urethra and the divided stricture into the bladder, and allowed to remain there. The urine of course flowed through the catheter. At the end of two days the silver catheter was removed, and replaced by one of elastic gum. The wound in the perineum gradually healed, and the patient ultimately recovered, making water in a full stream, and being able to introduce a sound of a full size into the bladder, so as to prevent a recurrence of the contraction.

The instrument used upon this occasion was ten inches in length, exclusive of the handle, and rather more than one quarter of an inch in diameter. The lancet measured three-sixteenths of an inch at its broadest part; it terminated in a sharp point, and could be made to project, by pressing a button on the other end of the stilet to which it was attached, to the length of half an inch, returning to its place within the silver tube, when the pressure was withdrawn, by the action of the spiral spring. In using it, one cutting edge of the lancet was directed towards the pubes, the other towards the perineum. The advantages of dividing the stricture by this method, as compared with other methods of operating, are, 1st, that the free opening made in the perineum prevents all danger from infiltration of urine; 2dly, that the fore-finger of one hand, being applied to the posterior surface of the stricture, serves as a guide for the lancet and enables you, with

the exercise of a little skill and caution, to make an exact division of the stricture.

In many cases of stricture, especially where the disease has existed for several years, you find that, although a bougie may be passed through the contracted part of the urethra, it will not enter the bladder. You may possibly succeed in the introduction of a metallic sound or catheter, when you have failed to introduce a bougie; but not unfrequently the obstruction which has prevented you from passing the bougie, will prevent you from passing the metallic instrument also. The obstruction in these cases arises from the irregularity of the surface of the urethra, where it is surrounded by the prostate gland, the immediate causes of which I have already described; and sometimes from enlargement of the prostate gland itself. If you use violence, or employ any but the gentlest treatment, you lacerate the membrane of the urethra, and the substance of the prostate. You make a false passage leading into the space between the bladder and the rectum, which may prove a source of constant trouble and perplexity afterwards. When you meet with the difficulty which I have mentioned, do not be over-anxious immediately to overcome it. It is not the original disease, but the effect of the stricture. Remove the cause, and the effect will cease, not indeed at once, but by degrees. Be contented at first with the dilatation of the stricture. The urine will then flow in a full stream, and the pressure of it on the parts behind being removed, they will regain their healthy condition; so that at last the catheter, or even the common bougie, will enter the bladder readily.

I say that you are not, under the circumstances which I have described, to use violence. But I cannot too strongly impress it on your minds, that, in the treatment of stricture, you ought not to use violence under any circumstances. Your success in the cure of this disease will depend very much on your attending to this important rule. Whether you use a bougie, or a sound, or a catheter, let the instrument be held lightly, and, as it were, loosely, in your hand; it will then in some measure, find its own way in that direction in which there is the least resistance: whereas, if you grasp it with force, the point can pass only where you direct it, and is just as likely to take a wrong course as a right one. A stricture will invariably resent rough usage: it will yield to patience and gentle treatment.

In a few cases of incipient stricture, and in some of those in which a stricture is merely spasmodic, after a bougie has been used for a certain length of time, the use of it may be dispensed with, and there will be no recurrence of the stricture. But these cases are rare exceptions to the general rule, which is, that there is danger of a relapse, and that a patient who is desirous of continuing well, must submit to the occasional use of the bougie ever afterwards. I generally instruct the patient in the introduction of it for himself. At first he may introduce it once in three or four days. He may afterwards use it at longer intervals, and he must take some pains to determine what those intervals should be. One person will find it necessary never to omit the use of the bougie for a longer period than a week, and another will



not have occasion to resort to it oftener than once in a month or six weeks.

The management of a case of stricture in which the patient is liable to attacks like those of intermittent fever, is often very perplexing. Occasionally, every introduction of a bougie is followed by a rigor, which is not only distressing to the patient at the time, but leaves him in a state of debility from which he may not recover for several days. And sometimes the rigor, as I have already explained, is only the precursor of a still worse train of symptoms, assuming the character of simple continued fever, of rheumatic fever, or even of mania. It is impossible to continue the use of the bougie under these circumstances. If you would cure the stricture, you must prevent the rigors. I have already mentioned one way of attaining this object, namely, by leaving the gum catheter in the bladder. You may also, in many instances where you expect the occurrence of a rigor, anticipate the attack by giving your patient a dose of opium, either by the mouth or in the form of clyster, immediately after you have introduced the bougie. But you are not to be contented with meeting the present difficulty. You should look to the future, and endeavour to correct that state of the system on which the disposition to rigors depends. For example, I was sent for to see a gentleman who had long suffered from a stricture of the urethra, and who was at the time labouring under a severe attack of retention of urine. I drew off his urine with a small elastic gum catheter, which was passed with the greatest facility into the bladder. In the course of two or three hours he experienced a desire to void his urine. It flowed readily in a stream, but immediately afterwards he was seized with a violent rigor. He remained feverish for a day or two, and then recovered. After a few days had elapsed, I began the dilatation of the stricture with a common bougie. The bougie was introduced without any difficulty, but it was followed by a rigor. The next time that the bougie was employed, there was a third attack of the same kind; and on the bougie being again resorted to, another and another rigor followed. I now omitted for a time the use of the bougie, and prescribed two grains of the sulphate of quinine to be taken every six hours. Under this treatment the patient's general health manifestly improved; and when, at the end of a week or ten days, we had recourse to the bougie, there was no recurrence of the rigors.

---

#### LECTURE IV.

##### *Treatment of Stricture of the Male Urethra—continued. Urinary Abscesses and Fistulae.*

You will meet with no cases in your practice of greater importance than those of urinary abscess, connected with stricture of the urethra; nor are there any in which the different results obtained from good

and bad surgery are more conspicuous than in these. If an abscess, with distinct fluctuation of matter, presents itself in the perineum, no one would hesitate to make an opening for the purpose of enabling the matter to escape. But it will often happen that there are urgent constitutional symptoms, and that a patient is in a state of the greatest danger, while the abscess is still confined behind the deep-seated fascia, the only external manifestation of it being a slight degree of fulness, and deep-seated hardness of the perineum. These, however, will be your sufficient guides. Bearing in mind the anatomical position of the parts, introduce a sharp-pointed double-edged scalpel, so as to penetrate the fascia. Watch for the first drop of matter which escapes, and then dilate the opening which you have made downwards and outwards, that is, in the same direction as the incision in lithotomy. There is here no time for hesitation and delay. Many lives have been preserved under these circumstances, by the prompt interference of the surgeon, which would have been lost otherwise. A urinary abscess cannot be opened too soon whenever it appears, and the opening should be as free as it can be made with prudence. This last observation is especially applicable to those cases in which the abscess shows itself in the lower part of the penis over the scrotum. If in such cases there be merely a small puncture, there is danger of some of the contents of the abscess being infiltrated into the loose cellular texture, producing an œdematous swelling first, and a succession of fresh abscesses afterwards.

I have known some surgeons formerly, who supposed that a fistula connected with the urethra, required to be laid open like a fistula connected with the rectum. But I suppose that few are liable to fall into such an error in the present day. The only cases of this description, in which the use of a bistoury or lancet may be required, are those in which there is a lodgment of matter in some part of the perineum, and in which a more free external opening is necessary for its escape.

The treatment of a *fistula in perineo* is, indeed, for the most part, as simple as possible. It is kept open by the urine flowing through it; and as soon as the urine finds a more ready outlet by the natural channel, the sides contract, and the sinus closes of itself. While the urethra remains contracted, no art can heal the fistula; nor ought you to wish to heal it, if it were possible for you to do so. But let the stricture be dilated, and in the great majority of cases the healing of it will be completed, even before the dilatation has gone so far as to restore the urethra to its original diameter.

Sometimes, however, the healing of the fistula proceeds more slowly; and this especially happens where the opening is of a large size, in consequence of there having been some loss of substance from sloughing of the cellular membrane at the time of the abscess being formed. Even in these cases you will seldom find any other treatment necessary than that of dilating the stricture to the full diameter of the urethra, and then keeping it dilated by the daily introduction of a sound or catheter. The opening in the perineum may not close for a month, nor for six months, nor even for a year; still it will close at



last. I formerly have advised the patient never to void his urine without the aid of the catheter; but I am now inclined to believe that the irritation thus kept up tends, on the whole, to delay rather than to expedite the cure. At other times I have kept the patient in bed for some weeks, with an elastic gum catheter constantly in the urethra and bladder; but I cannot say that, with my present experience, I have much more faith in this mode of treatment than in that which I mentioned before. After a few days the urine generally begins to flow by the side of the catheter, which does not therefore answer the purpose for which it was introduced, of preventing its escape by the sinus. Then in many cases the catheter causes an abundant suppuration of the urethra; and the purulent discharge, finding its way into the sinus, prevents it from closing as much as it would be prevented by the contact of the urine. The following plan of treatment may, however, occasionally be used with some advantage, in aid of the daily introduction of the sound. Stimulate the bottom of the sinus once in three or four days by the application of the nitrate of silver, at the same time that you retard the healing of the external orifice by lightly touching it, once in a week or fortnight, with a caustic potash. The reason for applying the caustic potash is as follows:—The external opening is more inclined to heal than the opening into the urethra. If you stimulate the whole surface of the fistula with the nitrate of silver, the superficial parts may heal prematurely; the necessary consequence of which will be another abscess and another discharge of matter. By applying the caustic potash to the external opening, you prevent this from healing, while the nitrate of silver promotes the contraction and cicatrization of the more deep-seated part of the fistula.

An abscess or fistula, which has no opening except into the urethra, is to be treated in the same manner as the same kind of abscess in connection with the rectum. Watch for the opportunity when matter is collected in it, and then establish an external opening by dividing the integuments over it with a lancet, so as to convert it into a fistula of the ordinary kind. There are some of these cases, however, the treatment of which requires a more particular explanation. A patient may apply to you who perhaps has had gonorrhœa formerly, followed by a slight obstruction of the urethra, complaining at the same time of a discharge from the urethra, which he calls an obstinate gleet. You examine the perineum, and you find in it a small tumor, not larger than a horse-bean or filbert. It is at some distance from the surface, and the patient says that it has been co-existent with the gleet, and that it is sometimes inflamed and tender. Now this little tumor indicates the existence of a blind fistula. There is a small orifice in the urethra, and a narrow channel leading from it into the centre of the tumor; and every time that the urine flows, a very small quantity finds its way into this channel, escaping from it immediately afterwards by regurgitation into the urethra. In consequence of the smallness of the cavity, and the quantity of solid matter deposited on its outside, the fluctuation of fluid in it is not perceptible. I have known this state of things to continue, producing more or less occasional inconvenience,

for many years. The first thing necessary to the cure is to make an opening in the perineum leading into the cavity in the centre of the tumor. But this may not be very easily accomplished, on account of the smallness of the cavity. You should introduce the lancet somewhat obliquely, so as to divide the tumor as nearly as possible through its centre. Then introduce some lint, so as to prevent the wound uniting by the first intention. After three or four days you may remove the lint, and then you will ascertain whether you have done what was required, by observing whether, when the patient voids his urine, any portion of it flows through the opening which you have made. If this be the case, nothing further is required than that the stricture should be dilated in the usual way. If, however, no urine flows through the opening, you may proceed thus:—Introduce a piece of caustic potash through the wound into the centre of the tumor, so as to make a considerable slough. A portion of the tumor being thus destroyed, the probability is that, when the slough has separated, it will be found that the central cavity is exposed, and that you have accomplished the object which you had in view.

We occasionally meet with cases in which there is a fistulous opening into the urethra in some part of the space between the scrotum and the external orifice. Where the opening is of a small size, it may usually be made to contract and heal by touching the margin of it occasionally with the nitric acid or nitrate of silver. Where, however, there has been a considerable loss of substance, either from ulceration or sloughing, it is impossible to close the opening without borrowing a portion of skin from the neighboring parts. Sir Astley Cooper and Mr. Earle have published an account of some cases in which this operation was attended with success. Since then, Mr. Dieffenbach has performed it in a great many instances. You will find an account of his practice in the "Dublin Journal of Medical Science," to which I may refer you for further information on the subject.

*Obstructions of the Urethra arising from Mechanical Injury.*  
*Treatment.*

The obstructions of the urethra which are occasionally met with as the result of mechanical injury necessarily produce many symptoms corresponding to those which occur in ordinary cases of stricture. They differ from them, however, in some essential circumstances, and therefore require a separate consideration.

These obstructions may take place in any part of the canal, and may be produced in various ways. A foolish boy contrived to slip his penis into a small metallic ring. The swelling of the glans made its removal difficult, and, when this was at last accomplished, it had caused ulceration of the skin and *corpus spongiosum*, extending into the urethra. As the ulcer healed, the urethra became contracted; and when the patient was admitted into the hospital some time afterwards, there was a small fistulous orifice in the middle of a hard cic-



trix, through which the greater part of the urine was discharged, while a common probe was with difficulty passed from the external orifice through that portion of the urethra which was included in the cicatrix.

But the more frequent seat of the obstruction is that part of the urethra which is immediately below the pubes, where the mucous membrane is especially liable to suffer from a blow, compressing it against the hard substance of the bone. In some cases these obstructions are formed where there is no evident injury of the integuments or the other superficial parts of the perineum. For example, a man, twenty-two years of age, while riding a restive horse, was suddenly thrown forwards, so that his perineum received a severe blow from the pommel of the saddle. The accident caused at the time a severe pain, attended with a discharge of blood from the urethra. The bleeding continued during the night, but had ceased on the following morning. He then experienced a smarting pain in making water, which however subsided in a few days. During the following month he suffered no inconvenience, but he now observed that his stream of urine was diminished in size, and that it was sometimes divided into two. The diminution of the stream continued, with a good deal of pain as the urine flowed. At last there was a complete retention of urine, which however subsided spontaneously in the course of a few hours. Seven months after the accident, when he was admitted into the hospital, the urine flowed in a stream not larger than a small wire. The catheter met with an obstruction behind the bulb of the urethra, and one of a very small size was with great difficulty introduced into the bladder, passing over what appeared to be a hard gristly and irregular surface. The dilatation of the contraction was not accomplished without a great deal of both local and constitutional disturbance, and it was not until after the lapse of five months that the patient was able to leave the hospital. At this time a catheter of a middle size could be introduced into the bladder, and the urine flowed in a stream, much below the natural size, but sufficiently large to enable the bladder to be emptied without difficulty.

In other cases a deep wound of the perineum may extend into the urethra. If the urethra be only partially divided, I conclude that no more mischief will ensue there after the operation of lithotomy; but if the division be complete, it is difficult to conceive that in the progress of cicatrization a contraction of the urethra shall not ensue. I met with an example of this in a child, who had received a wound of the perineum some time before (if I recollect rightly) from a broken glass bottle. There was a hard cicatrix immediately below the pubes and behind the scrotum, and a fistulous sinus through which the urine flowed, while scarcely any was passed by the natural passage.

But there are cases of more frequent occurrence, in which a blow on the perineum has lacerated the urethra, confused the parts between it and the skin, caused an effusion of blood into the perineum and scrotum, some portion of urine becoming infiltrated into the cellular membrane afterwards; the result of the whole being the formation of an abscess, and the destruction of the injured parts by sloughing to a

greater or less extent. Here, as the sore heals, a hard gristly cicatrix is generated, adhering to the pubes, with an orifice in the centre, through which the whole or the greater part of the urine is discharged.

The condition of a patient under the circumstances which have been described is much worse than that of one who labours under a perineal fistula connected with an ordinary stricture of the urethra. The difficulty of voiding the urine is more constant; it is liable to be increased, so as to become a complete retention, from attacks, not of spasm, but of inflammation, producing at the time much pain in the perineum, and followed by a fresh accumulation of matter beneath the cicatrix; and, in addition to all this, the treatment of these cases is not less troublesome to the surgeon than it is distressing to the patient, and for the most part does not lead to the same satisfactory results as that of ordinary stricture.

In all cases in which there is reason to believe that the urethra has been divided or lacerated in consequence of an injury inflicted on the perineum, it is the duty of the surgeon, not only to look at the great and immediate danger, but to guard against future ill consequences; and much may be done at this period towards preventing a most serious inconvenience, which would be relieved with difficulty afterwards. If there be a penetrating wound, in which the urethra is probably implicated, an elastic gum catheter should be introduced with the least possible delay, and allowed to remain in the urethra and bladder until the healing of the wound is far advanced, or, at all events, until it is ascertained that the urethra has not suffered; the catheter being however occasionally removed for a limited time, if it seems to act as a source of irritation.

In cases of contusion of the perineum, when the effusion of blood in the perineum and scrotum, and more especially the discharge of blood from the urethra, or any other circumstances, lead to the suspicion that the urethra has been lacerated, the same treatment should be had recourse to: the gum catheter should be introduced as soon as possible, and allowed to remain for at least some days after the occurrence of the accident. The extravasation of blood does not in itself justify the making an incision in the perineum; and indeed, according to my experience, there can be no worse practice than that of making an incision in a case of simple ecchymosis, either in this or in any other situation. But where such extravasation exists, there is always reason to apprehend that there may be further mischief; the progress of the case, therefore, should be carefully watched, and on the first appearance of any symptoms which might be supposed to indicate that urine had escaped into the cellular membrane, or that suppuration had begun to take place, a staff should be introduced into the urethra instead of the gum catheter, and a free incision should be made from the perineum into it, the gum catheter being replaced afterwards.

But it may be that these measures of precaution have not been adopted in the first instance, and that you are not consulted until after the lapse of a considerable time, when the wound or laceration of the urethra is already healed, leaving the urethra contracted in the



situation of the cicatrix. Here you may perhaps succeed in gradually dilating the urethra, as where there is an ordinary stricture. But, in a case which I have already mentioned, I have stated that "this was not accomplished without a great deal of local and constitutional disturbance;" and so it has been in all the cases of this kind which have fallen under my observation. Nor will the occurrence of such difficulties be a matter of surprise to any one who bears in mind that here the object is to dilate, not a genuine stricture, but a cicatrix, of the urethra, and who has observed how the cicatrix of an old sore leg inflames and cracks when the subjacent muscles begin to increase in bulk from exercise, or how the endeavour to extend forcibly the contraction after an extensive burn produces the same result. It may be that these difficulties are insuperable under the method of treatment by simple dilation; and under these circumstances, a small staff having been introduced into the bladder, the cicatrix of the urethra should be divided by an incision from the perineum, a gum catheter being introduced afterwards, and allowed to remain until the wound is healed over it. But even then much remains to be accomplished. The cicatrix has still a greater disposition to contract than an ordinary stricture; the bougie or catheter must be had recourse to almost daily, and the patient must be contented if he can persevere in the use of instruments of a moderate diameter, as the urethra will invariably resent the attempt to keep it dilated by those of large dimensions.

Under the treatment which has been just described you will rarely fail to improve the condition of the patient in those cases in which the injury of the urethra has been of limited extent. But it is otherwise with respect to those other cases in which there has been an actual loss of substance of some portion of the canal from ulceration or sloughing. Here, either the patient must be left to the discomfort and misery of voiding the whole of his urine by the perineum for the remainder of his days, or he must submit to an operation, to perform which, in a satisfactory manner, requires the utmost exertion of skill on the part of the surgeon, and of which even then nothing better can be said than that it is the only thing which, under his peculiar circumstances, affords him a reasonable prospect of relief. The object of the operation is to make an artificial communication between the anterior and posterior portions of the urethra (so as to supply the place of that part of the canal which is deficient) through which the urine may flow instead of escaping by the fistulous opening in the perineum. I cannot explain what I have to say on this subject better than by giving a brief history of a case which I have lately attended with Mr. Baker of Bulstrode Street.

A young man, in making a leap on horseback, received a violent blow on the perineum from the pommel of the saddle. The immediate consequence of the injury was hæmorrhage from the urethra, and this was followed by extravasation of urine and sloughing of the perineum to a considerable extent. A catheter was at first introduced into the bladder, but it was afterwards removed. The sloughs having separated, the sore in the perineum gradually closed, a small

fistulous opening only being left immediately behind the scrotum, through which the whole of the urine was discharged. He was in this state seven months after the occurrence of the accident, when he arrived in London, and Mr. Baker advised him to have my opinion on his case.

On introducing an instrument into the urethra I found an obstruction of the canal immediately below the pubes. Several ineffectual attempts having been made to penetrate the obstruction in the usual manner by bougies and sounds of various sizes, I had recourse to the following operation:—The patient having been placed in the same position as in lithotomy, a staff was introduced into the urethra, and held by Mr. Hilles, who, with Mr. Baker, assisted me in the operation, with the extremity of it resting against the obstruction. I then made an incision in the perineum, extending backwards from the part in which the staff was to be felt, in the direction towards the prostate gland. It was now evident that not less than three quarters of an inch of the urethra was deficient below the pubes; the place of it being occupied by a rigid cicatrix. This having been divided longitudinally by the point of the scalpel, I was enabled, though not without some difficulty, to pass the staff from the part at which the extremity of it rested, into the sound portion of the urethra towards the bladder, and then into the bladder itself. The staff was then withdrawn, and an elastic gum catheter having been substituted for it, the latter was allowed to remain in the urethra and bladder. On the ninth day after the operation, there being some degree of irritation at the neck of the bladder, the catheter was removed, being reintroduced, however, after two days more. From this time it was removed at intervals, which were sometimes longer, sometimes shorter, according to circumstances. The wound in the perineum gradually healed, and in less than ten weeks from the time of the operation was reduced to the diameter of a small pea. The patient was now able to introduce a silver catheter of the size of his urethra into the bladder without difficulty, and he repeated this operation so as to draw off his urine three or four times daily. When he voided his urine without the catheter, by placing the point of his finger on the opening in the perineum, he was enabled to discharge the whole in a sufficient stream by the urethra.\*

\*The last report which I had of this patient was six months after the operation, and to this effect: "that he had continued to improve, and expected in the course of a fortnight to be as well as ever."

Since the manuscript of this lecture was prepared for the press, a case very similar to that described above has come under my care, in the person of a young man nineteen years of age. He had received an injury of the perineum in leaping over a gate about a year ago. Three quarters of an inch of the urethra below the pubes seemed to be deficient. I made an artificial canal, joining the anterior and posterior portions of the urethra to each other, by perforating the cicatrix with the instrument having the concealed lancet, described at page 60, leaving an elastic gum catheter in the urethra and bladder afterwards. At this time about ten weeks after the operation, the patient voids his urine by the urethra in a full stream, without pain or difficulty, no more than a few drops escaping by the opening in the perineum. A common plaster bougie may be introduced readily into the bladder. Mr. Guthrie saw this patient with me, and lent me his assistance at the operation.



## LECTURE V.

*On some other Diseases of the Male Urethra.*

THERE are some other diseases of the male urethra which, in a greater or less degree, obstruct the flow of urine, but which are to be distinguished from that disease to which our attention has been hitherto directed.

In cases of ulcers of the glans including the whole circumference of the orifice of the urethra, as the ulcer heals, the orifice becomes contracted, so that when the healing process is completed the stream of urine is much reduced in size. But this is not all. The contraction, if left to itself, goes on increasing, until at last there is a complete retention of urine, and it is very probable that you are not called in until this last stage of the disease.

The management of the case, in some instances, is rendered more complicated by the circumstance of the præpuce having contracted partial adhesions to the surface of the glands, at the same time that there is a complete phimosis. Where this complication exists, you must begin with dividing or slitting up the præpuce. You then find the exposed surface of the glands, in all probability, presenting the appearance of an irregular cicatrix, in which you at last discover, but not without a minute inspection, the contracted orifice of the urethra. Into this orifice introduce a small silver probe, such as is made to be inserted into the *punctum lachrymale* of the eyelid. Having withdrawn this, introduce another probe of a somewhat larger size; then one a little larger still; and afterwards insert a common silver director passing it as far as one or two inches into the urethra. This will enable the patient to make water, the urine flowing along the groove of the director. After the bladder is emptied, introduce the point of a straight bistoury along the groove of the director, and divide the contracted orifice of the urethra. Let the patient retain a gum catheter in the urethra and bladder until the incision is nearly healed. He will then make water without the smallest difficulty or impediment: but the cicatrix has the same disposition to contract as before; and, in order to prevent the contraction again taking place, a bougie about two inches long should be introduced into the urethra every morning, and allowed to remain there for five or ten minutes.

The urethra is, as you well know, surrounded by mucous follicles, which secrete a mucus by which the canal is lubricated. In some cases, one of these follicles becomes converted into a small indurated tumor, varying from the size of a hempseed to that of a horse-bean. Such a tumor is to be felt, imbedded, as it were, in the *corpus spongiosum*. The usual situation of it is about two or three inches from the external orifice, but it is sometimes perceptible close to the fraenum, and at other times within the scrotum. The disease undoubtedly originates in inflammation; but, being once established, the tumor may remain unaltered after all symptoms of active inflammation have

subsided. If it be very small, it gives the patient little or no inconvenience; but otherwise, it torments him by producing chordee, and by keeping up a constant gleet discharge from the urethra. In many cases, in which what is called a gleet continues unabated for a great length of time, this depends on the irritation kept up in the urethra by one of these enlarged and indurated follicles. For the most part, it is better to allow the disease to take its own course. The tumor may disappear in the course of a few weeks or months. If it should not do so, you may then endeavor to reduce it by the external application of the *unguentum hydragyri* with camphor; or by keeping the patient in bed, with a gum catheter in the urethra and bladder. This plan may be pursued for a few days each time, and repeated at intervals until the tumor is nearly dispersed. The gum catheter should be of a small size: a large one will produce an effect exactly contrary to what you wish, irritating the gland, and exciting a fresh attack of inflammation in it. I have known the attempt made to destroy one of these enlarged follicles by means of the bougie armed with the nitrate of silver; but in the cases to which I allude the treatment seemed to be injurious rather than beneficial. It has often occurred to me that the tumor, when not of a very large size, and not very closely attached to the surrounding parts, might be dissected out without injury to the *corpus spongiosum* or urethra; but I have never yet performed such an operation. In some instances suppuration takes place in one of these tumors, and an abscess bursts externally. The healing of the abscess is generally slow; and after it has healed, an induration remains, which, however, gradually disappears. In other cases it bursts internally, and the cavity of it is liable to become distended by a portion of the urine finding its way into it. Under these circumstances you may direct the patient to place his finger on the part when he makes water, so as to make a moderate pressure on it. Thus the urine will be prevented entering the abscess, which will at last, in all probability, heal. If, however, it should not heal, you may introduce a director into the urethra, and then make an incision in it so as to establish a free external opening, leading to the centre of the abscess, dressing the parts afterwards with some stimulating ointment, and applying occasionally the nitrate of silver.

I have seen one case, in which one of these enlarged glands produced a complete obstruction of the urethra, and a retention of urine. The urethra became ulcerated behind the obstruction; the ulceration extended to the external parts, and the urine became extravasated into the cellular membrane of the scrotum and penis. The patient was admitted into the hospital with extensive mortification of these parts, and died. The examination of the body after death enabled me to ascertain the nature of the disease.

#### *Diseases of the Female Urethra.*

Passing over those affections of the male urethra which are connected with syphilis and gonorrhœa, I shall draw your attention to the



diseases of the female urethra. These are few and simple, and, as I have already had occasion to observe, all that is to be said respecting them may be comprised in a very few words.

Stricture of the female urethra is very rare; nor have I ever seen it except at, or immediately within, the external meatus. I have a preparation which affords an example of stricture in this situation. It was taken from the body of a woman who died under the following circumstances:—She was admitted into the hospital labouring under a very great difficulty of making water. The urine was voided almost in drops, with much effort and straining. On examination, I found the external orifice of the urethra so much contracted that it would scarcely admit a small probe. It was, however, dilated by means of bougies, and the patient voided her urine in a moderate stream. Some time afterwards she was seized with an attack of fever, which proved to be dependent on inflammation of the peritonæum covering the liver, unconnected with the stricture, and of this she died. You will observe in the preparation taken from this patient that the stricture is quite at the extremity of the urethra, occupying about half an inch of the canal.

Sir Charles Clarke has described another disease of the female urethra, of which many examples have come under my own observation. It consists of a tumor, or excrescence, having its origin from the urethra immediately within the external meatus. The tumor projects externally; is of a soft texture; of a bright scarlet color; possessed of exquisite sensibility; and it varies in size from that of large pin's head to the size of a horse-bean. It may be removed by the probe-pointed scissors, the basis of it being afterward destroyed with the caustic potass; or it may be removed by the application of a ligature. The first of these methods is that which I have myself adopted, and which my own experience in these cases would induce me to prefer. Cut off the tumor first as close to the base as possible; wait until the bleeding has ceased, and then apply the *potassa fusa* for a short time to the cut surface. I have contrived an instrument which you will find it very convenient to employ where you have recourse to this operation. It is a silver tube, incomplete in one part of its circumference; so that, when introduced into the urethra, it allows the caustic to be applied to the tumor, while the sound part of the urethra is defended from it. On these, as on other occasions, where you employ the caustic potass, you should take care that it is of the very best quality, and recently made; and after you have applied it, the parts in the neighborhood should be bathed with vinegar, which will neutralize the caustic alkali, and prevent it acting where the action of it is not required.

In some of these cases, instead of the caustic potass, I have applied the concentrated nitric acid, by means of a probe armed with lint and dipped in the acid; defending the neighboring parts by washing them with the solution of the bicarbonate of potass; and I do not, indeed, know that either one of these caustics is preferable to the other.

*Irritable Bladder.*

In the greater number of cases of disease of the bladder, the most marked symptom under which the patient labors is a too frequent inclination to void the urine. The bladder is irritable; and those who have not combined with the observation of symptoms the study of morbid anatomy are apt to confound with each other diseases which are essentially different, under the general appellation of irritable bladder. In the observations which I am about to make, however, I shall apply the term irritable bladder to those cases only in which the irritability is not the consequence either of inflammation or of organic disease.

If healthy urine escapes from the bladder, and comes in contact with other textures, the peritonæum, for example, or the cellular membrane, it acts on these parts as a violent stimulus, inducing inflammation, gangrene, and death: while to the bladder it is no stimulus at all; the patient suffering no more inconvenience from it than he would have suffered if the bladder had been distended with the same quantity of water. If, however, there be any derangement of the functions of the general system, or of the kidneys in consequence of which the chemical qualities of the urine are altered, it then becomes a stimulus to the bladder itself; and the patient, under these circumstances, suffers inconvenience, and feels the desire to expel the contents of the bladder, when there is only a small quantity of urine collected in it. In some of these cases the urine contains an unusual quantity of lithate of ammonia, which is deposited, on cooling, mixed with other matter, in the form of a red or yellow uncrystallized sediment; or it may contain the pure lithic acid, showing itself in the form of a red sand. In other cases the urine is alkaline, having the odor of ammonia and depositing white crystals of the triple phosphate of ammonia and magnesia. It is right that I should notice these cases at present, though it be only in a brief manner. For farther information respecting them, and the treatment which they require, I must refer you to some of my subsequent Lectures relating to calculous affections.

Irritability of the bladder is occasionally a symptom of disease in, or of disease affecting, the nervous system. An elderly man, for example, complains of frequent attacks of giddiness. Sometimes, in walking, his head turns round, so that he is in danger of falling; and this symptom, probably, arises from an altered structure of the arteries of the brain, causing an imperfect state of the cerebral circulation. This state of things is sometimes attended with an irritable condition of the bladder; and although the urine is of a healthy quality, and the bladder itself is free from disease, the patient is tormented by a constant micturition, voiding his urine without pain, but at short intervals, and in small quantity at a time. You can do little for the patient's relief in such a case as this; but it is important that you should understand its real nature, so that, if you cannot effect a cure, you may avoid tormenting him with useless remedies.



Irritability of the bladder is at other times the result of mere nervousness; of the same state of the nervous system, as, in some other individuals, occasions a constant winking of the eyes, or twitches of the muscles or other parts. The frequent expulsion of the urine, being once begun, is kept up by habit; the bladder becomes less capacious than it ought to be; and it is not until after a lapse of time, nor without some effort on the part of the patient, that it is restored to its natural condition.

There are others, who have a tendency to diabetes, and who, overlooking the too abundant secretion of urine, and observing only the too frequent inclination to expel it, consult you under the impression that they labor under a disease of the bladder, while the actual disease is in the kidneys, or rather in the general system. Now, these things may appear too trivial, or too obvious, to be worthy of being mentioned; but I have known them to be a source of error; and I am anxious that, when you meet with such cases, you should not be perplexed in forming your diagnosis.

#### *Paralysis of the Bladder.*

Injuries and diseases of the brain and spinal marrow, which render the limbs paralytic, may render the bladder paralytic also. The bladder is not unfrequently affected in the same manner in cases of typhus fever, or where there is a great general excitement in consequence of a compound fracture, or other severe local injury, especially of the lower extremities.

Retention of urine from paralysis of the bladder is attended with symptoms which are, in many respects, different from those which occur where the retention arises from mechanical obstruction. The same diminution of nervous influence, which renders the bladder incapable of expelling the urine, renders it also insensible to its stimulus. Hence it is, that the accumulation of the urine in the bladder is productive of no actual suffering, and of comparatively little inconvenience. When a great degree of distension has taken place, the contents of the bladder begin to escape involuntarily; and this involuntary flow of urine continues, so as to prevent further accumulation, but not so as to empty the bladder. Being made acquainted with the circumstances which I have just mentioned, you will understand how it is that this kind of retention of urine is not unfrequently overlooked, especially in the cases of corpulent individuals, in whom the bladder may be distended to a considerable size before it can be distinguished by the hand above the pubes.

In some instances, although the bladder has lost its contractile power, the patient is able, nevertheless to get rid of a portion of its contents, in a stream, by his own natural efforts. This is accomplished by means of the action of the abdominal muscles, but not until the bladder has become enormously distended. Here the urine is expelled at short intervals, slowly, and in small quantity at a time. The patient be-

lieves the bladder to be empty, as he probably voids as many ounces of urine as are usually voided in twenty-four hours; and he is surprised to find, on the introduction of the catheter, that it draws off three or four pints, or even a larger quantity. Where this state of things has existed for a considerable time, if the patient dies, and you have the opportunity of instituting a *post-mortem* examination, you find the bladder very much dilated, the mucous membrane of a pale color, and the muscular tunic much attenuated.

Where the bladder is affected with paralysis, the patient is to be relieved by means of the catheter; and this is easily accomplished; there being no mechanical impediment to the introduction of the instrument. The operation must be repeated at stated intervals, at the same time that you attempt, by suitable remedies, to remove the cause of the paralysis, whatever it may be.

But it may be reasonable to inquire what will happen if the catheter be not employed. I have known such a retention of urine to exist, some urine escaping, but the bladder remaining distended, without the real nature of the case having been understood, for a great length of time; that is, for many months, or even for one or two years. The same overloaded state of the bladder is a still more frequent consequence of the chronic enlargement of the prostate gland, to which elderly persons are liable, as I shall explain to you hereafter. From whichever of these causes it arises, it produces the same effects. The kidneys become diseased; they secrete at first albuminous, and afterwards purulent urine; and other changes are produced in these organs which I need not describe at present, as they will be fully explained hereafter.

Paralysis of the bladder is usually the result of some disease or injury, which affects other muscles as well as that of the bladder. Occasionally, however, it occurs without this complication; the bladder, and (as far as we can see) the bladder only, being deprived of its power of action. A gentleman, a lawyer by profession, of sedentary habits, and of what is commonly called a nervous temperament, observed that he had not the usual desire to void his urine, and that when he did void it, it was in a very slow stream, and in small quantity. On the following day he voided none at all, but he had, at the same time, no inclination to void it, and, therefore, did not suffer. Another day arrived, and, being still in the same condition, he thought it prudent to consult a surgeon; not because he experienced either pain or inconvenience, but because he knew, as he expressed it, that all could not be right. The surgeon introduced a catheter, which entered the bladder without the smallest difficulty, and drew off a large wash-basinful of urine. The urine soon became again collected in the bladder, and the catheter was again had recourse to. The operation was repeated night and morning for a few days, at the end of which time the patient regained the power of making water, and was soon able to evacuate the contents of his bladder as usual. Some time afterwards he had another similar attack, from which he recovered more slowly than from the former one.



The paralytic affection of the bladder, which occurs in hysterical females, is of a peculiar kind, and deserves a separate consideration. It appears to me that the symptoms are to be traced to a still higher source than in ordinary cases of paralysis; that, in the first instance, it is not that the nerves are rendered incapable of conveying the stimulus of volition, but that the effort of volition is itself wanting; and this corresponds with what is observed in cases of loss of voice, and in many other diseases connected with hysteria. As the distension of the bladder increases, the patient begins to be uneasy, and at last suffers actual pain; and as soon as this happens, the volition is exercised as usual, and the bladder begins to expel its contents.

Thus, if the bladder be not relieved artificially, by the introduction of the catheter, the hysterical retention of urine is usually of short duration. If, however, the catheter be had recourse to, the natural cure is prevented, and the existence of the disease may be prolonged for an indefinite period of time—for weeks or even for months. The general rule to be observed in the treatment of these cases is to interfere but little. You may administer an active aperient, or an assafœtida by the mouth, but you should avoid using the catheter. This general rule, however, is not without its exceptions. In a few of these cases, where the bladder has been very much distended, the consequence of this over-distension is, that it loses its power of contraction, and even though the patient endeavors to make water, no urine flows. Under these circumstances it is evident that artificial relief is necessary; and if it be not afforded, more than a simple inconvenience may be the result. A young woman was admitted into St. George's Hospital, in November, 1814, labouring under a train of symptoms which I believe to have been connected with the same condition of the nervous system as that which produces the phenomena of hysteria. I should be wandering from my subject, if I were to relate to you all the circumstances of this interesting and important case. It is sufficient for our present purpose that you should be informed that one of the symptoms was a retention of urine, which had been long neglected, and which existed to such an extent that forty ounces of urine were drawn off by the catheter; and that the patient ultimately died. In my notes I find the following account of the appearances which the bladder presented in the *post-mortem* examination:—"It was of a very large size, as if it had been for a long time unusually dilated. It was throughout of a dark color almost black. There were only some slight vestiges of its natural structure left; the muscular fibres being very much wasted, and the internal membrane presenting the appearance of a very thin film, which was readily separated from the parts below. The dark color of the bladder did not seem to arise from mortification, since there was neither fœtor, nor any other mark of putrefaction." The state of the bladder was, indeed, very peculiar; not resembling any thing which has fallen under my observation either before or since.

*Inflammation of the Bladder.*

You will find in practice that acute inflammation of the bladder is of much less common occurrence than you would suppose it to be, from what is said on the subject by nosological writers. Cases of retention of urine, and cases of inflammation of the prostate gland, are not unfrequently mistaken for it by persons who are not very conversant with the diseases of the urinary organs.

Acute inflammation of the bladder, does, however, occur sometimes. You have especially the opportunity of seeing it in cases of gonorrhœa. Where there is a sudden suppression of the discharge from the urethra, the metastasis takes place, sometimes to the testicle, sometimes to the prostate gland; at other times, but less frequently, to the mucous membrane of the bladder. The patient has a frequent desire to void his urine, with a sensation as if there were urine in the bladder, when there is really no urine in it; and he strains to make water, with the bladder empty. There is pain referred to the region of the pubes and perineum. The urine deposits a sediment, which is of a different character in different cases, as I shall explain hereafter. The pulse is frequent, the tongue furred, and there is a good deal of constitutional excitement. These symptoms may continue for several days; and in cases of gonorrhœa they do not usually subside until the purulent discharge from the urethra is restored.

The disease is to be combated by taking blood from the arm, or from the loins by cupping, or from the lower part of the abdomen by leeches. The patient should be confined to bed and the horizontal posture. His bowels should be kept open by occasional doses of castor oil. Opium may be administered with advantage, especially in the form of clysters. Sometimes the urine retains its acid quality, turning the blue litmus paper red; and the sediment, which it deposits is of a yellowish color, having no adhesive quality, and bearing some degree of resemblance to pus; and in these cases, if I am not much mistaken, the patient will derive benefit from the use of mercury,—two grains of calomel, and half a grain of opium, being administered twice or three times daily. In other cases the urine is alkaline, turning the reddened litmus paper blue, and depositing a small quantity of adhesive mucus of a brownish color; and, under these circumstances, I have known much good to arise from the use of the *vinum colchici*, fifteen or twenty minims being given three times daily, for three or four successive days.

Chronic inflammation of the bladder occurs very frequently as a secondary disease, depending on long-continued stricture of the urethra, disease of the prostate gland or kidneys, or stone in the bladder. Women are also liable to it, in whom there exists an ulcerated communication between the bladder and vagina. As a primary affection it is comparatively rare. However, it occurs as such sometimes; and I have seen a few patients in whom it had existed for a considerable length of time, and could not be traced to any other disease.



I shall describe to you, first, the appearance which the diseased parts exhibit on dissection; secondly, the symptoms which the disease produces; and, lastly, the treatment which it requires.

The mucous membrane is of a dark red color, in consequence of its numerous vessels ramifying it on its surface, injected with their own blood. As the disease proceeds, the discoloration becomes greater, until, at last, the mucous membrane appears almost black from the turgid state of the vessels; at the same time that it is somewhat thickened and pulpy to the touch. The inflammation extends up the membrane of the ureters; which, in their turn, assume much the same appearance with the bladder itself. The pelvis of each kidney, and the processes of the pelvis, or infundibula, become inflamed also: and these, as well as the ureters, are generally dilated, so as to be more capacious than natural. This dilatation is greatest where there has been a long continued difficulty in expelling the urine from the bladder; but it exists in other cases also, though in a less degree. In the advanced stage of the disease the inflammation is found to have extended to the glandular structure of the kidneys; and these organs become not only more vascular than natural, but enlarged in size, and of a soft consistence, even approaching in appearance to that of a medullary tumor. Collections of muco-purulent fluid, tinged brown with grumous blood, and offensive to the smell, are sometimes found in the dilated infundibula; at other times there are distinct abscesses in the glandular structure. In cases where the disease is still farther advanced, before the patient dies, we find that the inflammation has extended to the muscular tunic of the bladder, and to the loose cellular membrane by which the bladder is surrounded. Then coagulated albumen is deposited in the cellular texture; not unfrequently small putrid abscesses are formed in it; and sometimes it is found after death in a state of slough, or approaching to it. Occasionally, but rarely, ulceration takes place on the inner surface of the bladder, and sometimes to a very great extent. A patient, about fifty years of age, died in St George's Hospital, labouring under the symptoms which I am about to describe. On examining the body, the mucous membrane was found destroyed every where, except a very small portion near the neck of the bladder. The muscular fibres were as distinctly exposed as they could have been by the most careful dissection. The prostate gland in this case was slightly enlarged; the membrane of the ureters and pelves of the kidneys were much inflamed, and the ureters were dilated. I remember a preparation, exhibiting nearly the same appearances, in Dr. William Hunter's Museum, which was formerly in Windmill Street, but which is now in Glasgow.

As chronic inflammation of the bladder is, in the majority of cases, not a primary but a secondary affection, the symptoms of it are generally blended with those of another disease, as of stone in the bladder in one case; of stricture in the urethra, or enlargement of the prostate, in another case. I shall endeavour to describe the symptoms as nearly as I can, distinct from those of the diseases which it accom-

panies, such as you find them to be in those cases, in which the inflammation of the bladder is the only existing malady.

The patient has frequent desire to void his urine, and the urine deposits, as it cools, a thick adhesive mucus, which clings to the bottom of the vessel. This mucus is of a greyish colour, streaked with white, and sometimes tinged with blood. There is pain previously to making water, and also while the urine flows. These symptoms may continue for a great length of time without becoming very urgent. However, they gradually increase, until the irritation of the bladder becomes excessive, and the quantity of mucus deposited is so great, as in some cases to be nearly equal the urine itself. In this last respect, however, there is a great difference in different cases. The urine ultimately assumes a brownish hue, and is of a most offensive ammoniacal odor. The extension of the inflammation to the glandular structure of the kidneys is indicated by the access of a still more formidable train of symptoms. The patient has shiverings; is troubled with sickness and vomiting, with cold extremities and great prostration of strength; his pulse becomes irregular and intermitting; his tongue brown; he sinks, and dies. In the case which I mentioned, in which the bladder was extensively ulcerated, there was excruciating pain referred to the perineum and urethra, especially after making water; and the introduction of a sound into the bladder occasioned excessive torment. The symptoms which existed in the patient whose ulcerated bladder is preserved in Dr. William Hunter's Museum, are thus described in Dr. Hunter's Catalogue:—"Great pain and scalding in voiding the urine, a discharge of pus, and occasionally of blood."

The mucus, which is deposited by the urine in these cases, deserves our especial notice. It is thick and viscid, clinging to the bottom of the vessel, and hanging down in the form of long ropes, when you attempt to pour it from one vessel to another. It is highly alkaline, turning the tumeric paper immediately brown. When small in quantity, although the mucus is alkaline, the urine often remains acid, as has been observed by Dr. Prout; but when the quantity of mucus is large, it imparts its alkaline quality to the whole of the urine, which, under these circumstances, is liable to deposit calculous matter, composed of phosphate of lime, in small masses, of the consistence of recently made mortar. It is the formation of this peculiar mucus which led the old physicians and surgeons to apply to this disease the name of *catarrhus vesicæ*. It may appear remarkable that the mucous membrane of the bladder, when in a state of inflammation, should secrete this peculiar mucus, while that of the urethra, under the same circumstances, secretes a fluid which cannot be distinguished from true pus. The very interesting researches of Dr. Babington, however, recorded in the second volume of the "Guy's Hospital Reports," go far towards explaining this anomaly, by showing that the pus from a common abscess assumes all the characters of this kind of mucus on the addition of an alkali.

In treatment of chronic inflammation of the bladder, you are to consider whether it be a primary or secondary affection; and if the



latter, the first thing to be done is, that you should remove or palliate the original complaint. If there be a stricture, you are to dilate it: if there be a stone in the bladder, you will in vain endeavor to remove the inflammation, without removing the stone, which has produced it: if there be a disease in the prostate gland, you are to resort to the plan of treatment which I shall describe to you in a future Lecture.

But even in these cases something may be done by other means towards relieving the affection of the bladder; and where this is the original disease, of course these other means are all on which you are to depend.

Let the patient remain as much as possible in the horizontal posture. When he sits or stands, there is the weight of the whole column of blood, from the head to the pelvis, pressing on the vessels of the bladder; and blood-vessels become distended, which are comparatively empty when he lies down. The horizontal position is as important in diseases of the bladder as it is in diseases of the uterus; as important as an elevated posture and a high pillow are in cases of determination of blood to the head; and its importance rests on precisely the same principle.

Opium agrees remarkably well with patients who labor under chronic inflammation of the bladder. It may be administered by the mouth, or in the form of an enema at bedtime; and other sedatives, as the extract of hyoscyamus, or lettuce, or poppies, may be administered besides, if necessary. The bowels should be kept in an open state, but no violent or drastic purgatives should be exhibited. Mercurial remedies, whether given in the form of alteratives or in larger doses, so as to affect the constitution, are certainly not beneficial, and are often injurious.

In a very few instances, where the digestion is impaired, small doses of alkalies combined with light bitters may be exhibited with advantage; but the extensive use of alkalies is prejudicial, causing the urine to become more alkaline, and the phosphatic salts to be deposited in larger quantities than before.

The *uva ursi* has the reputation of being useful as a remedy for chronic inflammation of the bladder. I must say, however, that this remedy has generally disappointed me in these cases, and that I have not seen those advantages produced by it, which the general reputation of the medicine had led me to expect. I have seen much more good done by a very old medicine, which has been long ignominiously but unjustly, expelled from the Pharmacopœia of the College of Physicians, namely, the root of the *pareira brava*; and with regard to this, I am satisfied that it has a great influence over the disease, which is now under our consideration, lessening very materially the secretion of the ropy mucus, which is in itself a very great evil, and, I believe, diminishing the inflammation of the bladder also. It may be exhibited in the following manner:—Take half an ounce of the root of the *pareira brava*, add three pints of water, let it simmer gently, near the

fire, until reduced to one pint\*. The patient is to drink from eight to twelve ounces of the decoction daily. If so large a quantity of liquid should be offensive to the patient's stomach, he may take the extract of *pareira brava* instead, twenty-five or thirty grains being equal to half a pint of the decoction. You may add to it moderate doses of the tincture of hyoscyamus; and in those cases in which there is a deposit of the phosphates, you may also add some of the muriatic or nitric acid. Very small doses of turpentine are sometimes beneficial in these cases. You may begin with one or two grains of Chios turpentine administered twice daily, giving a somewhat larger quantity afterwards. I have often known the symptoms to be much alleviated under the use of the cubebs pepper; but it must be given only in small quantities. When given in large doses I believe it to be actually injurious. I was consulted by a gentleman who labored under chronic inflammation of the bladder, and I prescribed for him fifteen grains of the powdered cubebs to be taken every eight hours. He was very much relieved, so much so, that he began to look forward to his recovery. Being anxious to expedite his cure, of his own accord, and without my knowledge, he took the cubebs in larger (I believe in dram doses.) This was followed not by a diminution, but by an aggravation of all his symptoms. The irritation of the bladder was much increased, the mucus was secreted in a much larger quantity than before, and ultimately the patient died; his death being, I will not say occasioned, but apparently very much hastened, by his imprudence in overdosing himself with the cubebs.

The bladder is accessible to local applications, and the question will here arise, "Can nothing be done for the patient by means of remedies of this description?" The following are the results of my experience on this subject.

In aggravated cases of the disease, where the symptoms are at their greatest height, the mildest injections, even those of tepid water, will do harm rather than good. They are especially to be avoided where the mucus deposited by the urine is highly tinged with blood. When however the symptoms have in some degree abated, the injection of tepid water or decoction of poppies is in many instances productive of excellent effects. An elastic gum catheter may be introduced into the bladder; and the injection may be made by means of a small elastic gum syringe. The liquid should be allowed to remain in the bladder about thirty or forty seconds, and not more than an ounce and a half, or two ounces, should be injected at each time. If the bladder be distended, so as to occasion any considerable degree of pain, the effect is always injurious instead of being beneficial. This operation may be repeated, according to circumstances, once or twice in twenty-four hours.

When there is a further abatement of the symptoms, the disease

\* The infusion of *pareira brava*, which has been introduced into the last Pharmacopœia of the College of Physicians, does not at all answer the purpose of the decoction and is nearly useless.



having assumed a still more chronic form, and the mucus being free (except on extraordinary occasions) from all admixture of blood, we may venture to add to the injection a very small quantity of nitric acid. At first the proportion ought to be not more than that of one minim of the contracted, or ten minims of the diluted nitric acid, to two ounces of distilled water; but afterwards this proportion may be doubled. I do not say that it should never be increased still further, but I have observed, that for the most part injections, which are stronger than this, are not only not useful but actually prejudicial. In having recourse to this mode of treatment, it is better to wash out the bladder first with a little tepid water; then to inject the acid solution, allowing it to remain for not more than thirty seconds in the bladder. At first the operation should not be repeated oftener than once in every two days; afterwards it may be repeated once daily, but never more frequently than this. If the urine drawn off by the catheter be tinged with blood, the injection should be deferred to the following day; and if the injection be at any time followed by pain, and other symptoms indicating an increase of inflammation, ought not to be had recourse to again until these have subsided.

I was first led to adopt the use of the injections of nitric acid in the year 1826; and from the experience which I have now had of them, I do not hesitate to say, that, with the precautions which I have suggested, be properly observed, they will be found to form a valuable addition to our stock of remedies to be employed in these cases. They are useful not only where the chronic inflammation is the primary disease, but also where it occurs as a secondary affection, the result of a calculus in the bladder, or of a chronic enlargement of the prostate gland.

It may be observed that, although treating of a chronic inflammation of a mucous membrane, I have not hitherto recommended the abstraction of blood. I have, however, had recourse to it in many instances, generally by means of the application of cupping glasses to the loins. I will not say that it has never been beneficial, but it is my duty to say also, that I have much more frequently found it to be injurious. However contrary it may seem to be to the principles on which the treatment of inflammatory diseases is generally to be conducted, I am satisfied that in those cases of inflammation of the bladder in which the mucous membrane secretes a considerable quantity of thick, tenacious, ropy mucus, falling to the bottom of the urine, the rule of practice should be, not to take away blood; and that this admits of very few exceptions. In fact, this species of vesical inflammation is, in the great majority of cases, combined, in some way or another, with great debility of the general system, and the patient requires (for the most part) that his bodily powers should be supported, rather than that any demand should be made upon them. I may refer you to my Lectures on Calculous Disorders for some observations in further illustration of this subject.

In speaking of inflammation of the bladder, I have considered it as being either of the acute or chronic kind; not only in compliance

with general custom, but because I could not otherwise so conveniently express all that is required to be said on the subject. At the same time it is right for you to bear in mind, not only on this, but also on other occasions, that, however useful it may be to make it, this distinction is really artificial. The boundaries of acute and chronic inflammation are not well defined. There are numerous cases in which we must hesitate to determine whether they may with most propriety be referred to one class or to the other; and there are other cases, which, while, at one period, they exhibit all the marks of acute inflammation, exhibit, at another period, those of chronic inflammation with equal distinctness.

### *Incontinence of Urine.*

By incontinence of urine, I intend to express an involuntary escape of urine from the bladder; a state of things entirely different from the constant discharges of urine which take place in cases of irritable bladder, where each discharge is the result of a distinct act of volition, excited by pain, or in some other way.

Incontinence of urine may be the result of mechanical injury; thus it occasionally follows the operation of lithotomy in the male, and very frequently follows it in the female sex. In women also it not uncommonly is the consequence of difficult parturition with a distended bladder, where the pressure of the child has caused sloughing of the vagina, and thus laid the foundation of a communication between it and the neck of the bladder.

The most frequent cause of incontinence of urine, however, in the male sex, is an over distended bladder. When the patient is unable to void his urine voluntarily, after a certain quantity is collected in it, the overplus is discharged involuntarily, and thus it is that this symptom occurs in cases of long-standing stricture of the urethra, of enlarged prostate gland; and of paralysis affecting the lower part of the body. The patient, and those about him, suppose the bladder to be empty, because the urine is always dribbling from him. But this very circumstance leads the surgeon to suspect the contrary; and accordingly, on examining the abdomen, he discovers an enormous tumor, formed by the distended bladder, occupying the hypogastric region, and extending upwards, perhaps as high as the navel. The remedy for this kind of incontinence is sufficiently obvious; nothing more being required than that the bladder should be emptied artificially at stated periods. In cases of stricture of the urethra, indeed, this cannot be always accomplished in the first instance; but the dilatation of the stricture, even to a very moderate extent, by the introduction of a small bougie, will often be sufficient to give much, if not complete, relief.

There are some cases of paralysis in which there is incontinence of urine although the bladder is empty, as if the same cause which rendered the lower limbs paralytic rendered the bladder incapable of distension. For example, a gentleman, sixty-three years of age, swal-



lowed by mistake a bottle of liniment, of which the tincture of cantharides was a principal ingredient. In about three quarters of an hour an emetic was administered; nevertheless he was immediately afterwards affected with paralysis of the lower extremities, and inability to void his urine. For the first fortnight he was under the necessity of having his urine drawn off at stated periods. After this he regained the power of making water, but was tormented by an incessant desire to do so. When I was consulted, four years after the commencement of the attack, he was able to walk with the assistance of crutches. At times he had a sudden and irresistible impulse to void his urine, and expelled a small quantity by a voluntary effort; but at other times it flowed involuntarily without his being conscious of what happened, so that his clothes were as wet as possible. On introducing a catheter, I found that the bladder was empty. It may be supposed, that in this case something was to be attributed to the peculiar nature of the stimulus which had been swallowed. I have, however, observed the same thing in some cases of paralysis of the lower limbs, arising from other causes. I have occasionally seen what was called a case of incontinence of urine in young women having a disposition to hysteria: but from a close observation of such cases, I am led to believe, that the discharge of urine, although involuntary in appearance, is not involuntary in reality; and that this symptom, like many other hysterical symptoms, is to be referred to a mis-direction of the power of volition, and not to the actual want of it. The case which I am about to mention seems to confirm this view of the subject. A lady, twenty years of age, for the last ten or eleven years had been troubled with a constant discharge of urine. It flowed (as she said) without her being able to prevent it while she sat in her chair, and while she was walking; so that she was quite unfit to live in society, or even in her own family. All the plans of treatment, recommended by myself and others, proved inefficacious. At last, on account of this infirmity, it was thought advisable that she should be separated from the rest of the family, and she was sent to reside at a distance from them. After some time she was seized with an urgent desire to return home, and immediately she regained the power of retaining her urine. She continued well when I heard of her some time afterwards.

I have no doubt that the incontinence of urine during the night, which occurs so frequently in children, is, for the most part, in its origin, not altogether involuntary. But it soon becomes confirmed by habit, and then the discharge is preceded by so slight an effort of volition, that the patient is scarcely conscious of it afterwards. It is reasonable to suppose, that those children whose urine is of a too stimulating quality, in consequence of an excess of lithic acid in it, may be more liable to this kind of incontinence than others; yet I must say, that my endeavors to relieve it by the exhibition of alkalies and purgatives, combined with a regulated diet, have been generally unsuccessful. A blister applied over the *os sacrum*, and repeated according to circumstances, is a more effectual remedy. Sir Charles

Bell has observed, that children are more liable to this troublesome symptom when they lie on their back than when they lie on the face or side. This may explain, in part at least, the good arising from the blister. The same object may be attained by making the child wear, during the night, a machine, so contrived as to prevent him lying in the supine posture.\* I do not know that you can absolutely rely on this method for the patient's cure, but it may often be employed advantageously, in combination with other methods of treatment. In some cases, the discharge of urine is periodical, returning at the same hour of the night and morning. You may then direct the nurse to take the child out of bed, so as to give him the opportunity of making water about an hour before; or if the patient be older, he may be provided with a clock, having a loud alarm, for the purpose of awakening him from his sleep at the proper moment. Under the same circumstances, the sulphate of quinine may be administered with great advantage. But in no instance are any of these remedies likely to be successful, unless the patient himself feels a strong desire to be relieved; and unfortunately this desire is too often wanting, long habit gradually reconciling the mind to this, as it does to many other inconveniences, until, at last, it seems to be a matter of indifference whether relief is obtained or not. I have heard of young persons being cured of this kind of incontinence of urine by applying caustic to the neck of the bladder, and by the introduction of bougies or catheters. If these methods of treatment produce any effect, I suspect that it is simply by annoying the patient, and by giving him that strong desire to be relieved, which I have just mentioned as the first step towards recovery.

#### LECTURE IV.

##### *Fungus Hæmatodes of the Bladder.*

MORBID growths, having the same character, and running the same course with malignant diseases in other textures, are not uncommonly met with in the bladder. Those which I have had the opportunity of examining have belonged to the class of *fungus hæmatodes*. Sometimes a portion of the tumor has resembled scirrhus; but I have never met with one which was wholly of the last-mentioned structure. In one instance I found the tumor situated at the fundus, but the more ordinary situation of it is near the neck of the bladder.

The disease appears to have its origin in the mucous membrane: sometimes occupying the whole of it, so that scarcely any of the natural structure remains at the time of the patient's death, but more

\* A very convenient apparatus for this purpose is made by Mr. Sparkes, bandage maker, &c. of No. 28 Conduit Street.



frequently it arises from a limited portion of its surface, while the greater part of the membrane remains in a healthy state. As the disease advances, it forms a large tumor projecting into the cavity of the bladder. In some instances it makes its way in other directions. In a case, in which the tumor was situated at its fundus, the bladder had contracted adhesions to the sigmoid flexure of the colon, and there was a large fungus projecting from it into the cavity of that portion of the intestine. In another case, some time before the patient died, a tumor presented itself in one groin, which rapidly increased to a considerable size. In examining the body after death, there were found scarcely any remains of the natural structure of the bladder. Nearly the whole of it was converted into a mass of fungous or medullary substance, occupying the cavity of the pelvis, and extending laterally so as to show itself in the groin.

In these cases the patient complains of a too frequent inclination to void his urine; of an uneasy sensation referred to the neck of the bladder, which sometimes amounts to severe pain extending to the perineum, and along the urethra to the glans, and in another direction to the pubes. This pain is generally aggravated after the urine is voided. I have known the patient to labor under a retention of urine, in consequence of the tumor pressing on the inner orifice of the urethra, so that it became necessary to puncture the bladder above the pubes. In another case there was a constant wearing pain in the loins, the cause of which was explained by the appearances observed in the *post-mortem* examination: the tumor having obstructed the orifices of the ureters, which were in consequence dilated to the size of the small intestine, the *pelvis* and *infundibula* of the kidney being dilated also, so as to form considerable sacs or pouches, distended with urine.

The urine is usually turbid; sometimes depositing an adhesive mucus, the consequence of long-continued irritation kept by the tumor in the mucous membrane of the bladder. In the advanced stage of the disease the urine is of a dingy brown color, of an offensive cadaverous odor; and small fragments of medullary substance, which appear to have been separated from the surface of the tumor, may be detected in it. In all cases there is a disposition to hæmorrhage; and in some, bloody urine is a constant, or nearly constant, symptom. The urine is not merely tinged with blood, but the blood comes away in large clots, of an irregular shape, in which small portions of medullary substance are not unfrequently enveloped. The hæmorrhage is occasionally abundant, so that it materially contributes to the gradual exhaustion of the bodily powers, which the disease otherwise induces, and hastens the patient's death.

These symptoms do not always occur in the same order; nor is the rapidity of their progress the same in all cases. I have known the disease to have run its course, so that the patient has fallen a victim to it, in the short space of eight or ten months from the period of its commencement; and I have also known it to be protracted for seven to eight years. Usually, the first symptoms are a too frequent inclination to void the urine, and pain experienced after it has been voided,

but, occasionally, the earliest warning which the patient has of the calamity under which he labors, is the appearance of blood in the urine. I have known the urine to be bloody for a short time, then to become clear, and continue so for one or two years, when the blood has again shown itself, never wholly disappearing afterwards.

In those cases in which fragments of organised medullary substance are to be detected in the urine, there can be no difficulty in the diagnosis; but where this symptom is wanting, each case requires to be observed and studied, in order that it should be understood, as all the other symptoms are equivocal. In the very great majority of cases in which there is blood in the urine, the hæmorrhage is the result of a calculus either in the kidney or bladder; but if there be no calculus, and the quantity of blood be considerable, it is more probable that it is derived from a medullary tumor, than from any other source. If the blood appears in the form of large masses of coagulum, of an irregular shape, we may be satisfied that it flows from the bladder, and not from the kidneys, and we may arrive at the same conclusion, if we find that a small quantity of pure blood is discharged from the urethra after the effort made to expel the last drops of the urine. If under these circumstances the bladder be subjected to two or three careful examinations with the sound, and no calculus can be detected in it, there are strong grounds for suspecting the existence of a medullary tumor. These suspicions will be strengthened if the hæmorrhage be accompanied with a frequent inclination to make water, and a pain extending along the urethra, and to the perineum, after the urine has flowed; and if the tumor be of a large, or even of a moderate size, they may be completely confirmed in another way. Let about six ounces of tepid water be injected into the bladder; a sound, which is considerably curved, but not projecting at the point much beyond the curvature, being introduced into it afterwards. With such a sound as this every part of the bladder may be readily explored; and the extremity will be distinctly perceived striking against the tumor, at the same time that that side of the bladder in which it is situated is found to be of less capacity than the other. In using a silver catheter in this manner, small portions of the substance of the tumor are sometimes found sticking in the eyes, or lateral openings, of the catheter, after it has been withdrawn.

*Fungus hæmatodes* is not more under our control where it affects the bladder than where it occurs in other organs; and no method which art has hitherto devised affords us the means of even checking the progress of this horrible malady. Rest in the horizontal posture, and opium administered, according to circumstances, either by the mouth or in the form of enema, will do as much as can be done towards mitigating the patient's sufferings. If there be considerable hæmorrhage, and the pulse be full and strong, blood may be taken from the arm, or from the loins by cupping. Otherwise the mineral acids, the acetate of lead, or other styptics, may be given internally. On the whole, it has appeared to me that the mineral acids have done more than any other medicine towards stopping the hæmorrhage.



Other morbid growths occasionally take place in the bladder. I have seen a case in which a fungus grew from a portion of the mucous membrane, having somewhat of a fibrous structure, and a good deal resembling in appearance the vessels of the placenta when unravelled. In Dr. William Hunter's Museum there is a preparation of a bladder, the inner membrane of which is, in several parts, elongated into laminae or processes, each about a quarter of an inch in length. I cannot undertake to point out to you in what manner such excrescences are to be distinguished from each other in the living body; and as all such cases are equally beyond the reach of remedies, such distinction, even if it could be made, would be of little practical importance.

### *Symptoms affecting the Bladder in consequence of Disease in the Kidney.*

Calculi of the kidney occasionally produce symptoms, which are referred to the bladder rather than to the kidney. I shall have occasion, in a future Lecture, to notice a well-marked example of this fact, which occurred in my own practice; and you will find others referred to by Morgagni. "A patient," says this eminent pathologist, "complained of very little pain in the region of the kidney; while he was tormented with pain in the bladder so excruciating, that five or six physicians who attended him entertained no doubt that the seat of the disease was in that organ. On dissection, however, no morbid appearance whatever was discovered in the bladder, but there were large and ramifying calculi of the kidney."

If calculi of the kidney produce symptoms which may easily be mistaken for those of disease in the bladder, it may reasonably be expected that some other diseases of the kidney should affect the bladder in the same manner. Several years have elapsed since I was first led to suspect this to be the case, and the result of all the experience, which I have since had, has been to remove whatever doubts I might formerly have entertained on the subject. Whoever is much engaged in this branch of surgical practice will meet with a number of facts which cannot so well be explained on any other hypothesis, and which collectively form such a mass of circumstantial evidence, as is almost irresistible, in favor of the opinion "that the worst symptoms of irritable bladder may occur as a consequence of disease of the kidney, the bladder itself, and the organs in immediate connection with it, having been free from disease in the first instance."

The opportunities of obtaining direct or positive evidence, (that is, by means of *post-mortem* examination,) on a point like this, are of comparatively rare occurrence; for so intimate is the union of the different organs which constitute the urinary system with each other, that disease can scarcely exist for a great length of time in one of them, without extending in a greater or less degree to the rest. Such opportunities are, however, occasionally met with where the patient has died before the disease has reached its most advanced stage; and I

am able to adduce the following histories in illustration of the foregoing observations.

A gentleman consulted me in November, 1833, labouring under the following symptoms:—He voided his urine frequently, and in quantities varying from an ounce to an ounce and a half. Always after making water he had a severe pain lasting a few minutes, and extending along the course of the urethra. The urine was pale, semi-opaque, of an acid quality, and, when tested with heat and nitrid acid, it was found to be highly albuminous. Occasionally, small masses of a substance resembling coagulated albumen were seen floating in it. He made no complaint of pain in the loins; he was able to empty his bladder by his own efforts, and the urethra was free from stricture. There was no calculus in the bladder, nor had sand or gravel ever been observed in the urine. These symptoms had begun to exist in the preceding February, since which time they had gradually increased. For a short time during the month of March, the urine had been tinged with blood.

In addition to these local ailments, the general health was much impaired: the patient had lost flesh, was languid, dejected, and of a pallid countenance.

Soon after I was consulted the urine became again tinged with blood. The bodily powers continued to fail, and the local symptoms became more urgent. There was a total loss of inclination for food, the extremities became cold, the pulse feeble, and he died at the end of February, 1834.

On examining the body after death, the kidneys were found to be of a dark color from excessive vascularity, and of a soft and somewhat brittle consistence; the distinction between the cortical and tubular positions being less marked than under ordinary circumstances. The investing membrane of the kidney had a very slight adhesion to the kidney itself, but it adhered very closely to the adipose substance of the loins. On the surface of each kidney, and partly imbedded on its substance, were four or five membranous cysts, each of the size of a large pea; and in one of them there was a similar cyst, but as large as a nutmeg, completely imbedded in the cortical substance. The *pelvis infundibula* and ureters were not more capacious than under ordinary circumstances; but, on their being slit open, their internal membranous surface presented the appearances of considerable inflammation.

It could not be said that the bladder was found altogether free from disease, but the morbid appearances were so slight, compared with those observed in the kidney, that it seemed impossible to doubt that the last-mentioned organ had been the seat of the primary disease, and that the latter was affected only in a secondary manner. It was contracted, and the muscular tunic was somewhat thickened; but not more so than must have been the case in a person who from any cause had been teased for a considerable time by an incessant inclination to void his urine. The vessels of the mucous membrane were turgid with blood; but not in the same degree as those of the membranous structures of the kidneys.



A gentleman, fifty-five years of age, consulted me, with Mr. Bagster, of Compton Street, Brunswick Square, in December, 1834, under the following circumstances:—He complained of an almost incessant inclination to void his urine; of an excruciating pain, referred to the region of the pubes and neck of the bladder, which occurred as soon as the urine was expelled, and then subsided; and also of a most severe pain extending along the whole canal of the urethra. This last symptom was not especially connected with the expulsion of the urine. It was nearly constant, but not quite so, as it occasionally intermitted for twelve hours, or even for a longer period.

The urine was acid, and when voided was slightly turbid, and of an opal color. When allowed to stand, it deposited some loose flakes, which bore a more near resemblance to coagulated lymph than to mucus. The clear urine, after this deposit had taken place, was tested by heat, and afterwards by the addition of nitric acid, and proved to be highly albuminous. There was no pain in the loins.

On inquiring into the patient's history, I was informed that in childhood he had voided a small calculus; that he had generally enjoyed good health until the year 1824, when he was affected by a succession of slight febrile attacks, attended with sickness and vomiting, from which, however, he recovered, so as to be apparently quite well afterwards.

In the year 1827 or 1828, and again in the year 1834, he had a similar attack. The last of these continued, with occasional remissions, from September to the beginning of November; and immediately after it had subsided the symptoms of irritation in the bladder and urethra first showed themselves, continuing unabated from this period up to that of my being consulted.

After a careful investigation of the case, I gave it as my opinion, that the real seat of the disease was in the kidneys, and that the bladder and urethra were only secondarily affected; and I proposed a plan of treatment accordingly. This was continued without any manifest improvement until the 5th of January, 1835, when the patient was suddenly seized with a pain in the neighborhood of the *epigastrium*, followed by urgent symptoms of peritoneal inflammation. In this illness he was attended by Dr. James Johnson and Mr. Bagster, but their efforts for his relief were unavailing, and he died in about four-days after its commencement.

On examining the body, the abdomen was found to contain a yellow fluid resembling a mixture of bile and serum. Coagulated lymph had been effused on different parts of the surface of the peritonæum, but chiefly in the neighborhood of the *duodenum* and *jejunum*, and had produced adhesions, which, however, being recent, were easily separated. The gall-bladder was attached in this manner to a fold of the *jejunum*: and on these adhesions being torn through, the bile was observed to escape from it in a small stream. On laying open the gall-bladder five or six biliary calculi, from the size of a pea to that of a horse-bean, were found in its cavity; and in one spot there was a distinct ulceration of the membrane lining it. The ulceration had ex-

tended completely through the peritonæum, covering the gall-bladder, so that it was evident that there must have been a communication, between the cavity of that viscus and the general cavity of the abdomen, previous to the formation of the adhesions with the small intestine.

The urethra and the urinary bladder presented no appearance of disease; but the tunics of the bladder were thinner than might have been expected, considering that the patient had for some time suffered from a frequent inclination to make water. The mucous membrane was not more vascular than under ordinary circumstances. The prostate gland was not enlarged; but it might be supposed that its texture was a little firmer than usual.

The right kidney was vascular, and of a somewhat soft and spongy texture; and its investing membrane adhered more closely to the fat of the loins than to the kidney itself. The ureter on this side was unusually small and attenuated. The left kidney was half as large again as usual. The fat of the loins, the investing membrane of the kidney, and the kidney itself, adhered so closely to each other, and were so consolidated that they could scarcely be separated from each other. In the upper part of this kidney there was a membranous cyst, containing about an ounce of a turbid fluid. This cyst appeared at first to have been formed by a dilated *infundibulum*; but on an accurate examination it was found to have no communication with the *pelvis* of the kidney. A good deal of earthy matter had been deposited in the membrane forming it, so that in one part it appeared like a shell of bone. In the lower part of the same kidney were two calculi (composed of the oxalate of lime), one as large as a horse-bean, the other smaller, but of a jagged and irregular figure. They lay in two separate *infundibula*, projecting into the *pelvis*. This kidney, like the other, was soft and vascular. The ureter was in a natural state.

What has been now stated seems to afford sufficient evidence as to the existence of symptoms referred to the bladder and urethra in some cases of disease in the kidney. But, with my present experience, I am led to this further conclusion, that a very large proportion of the cases, which have usually been confounded together, under the general appellation of irritable bladder, are really of this description; and that in many cases, in which the bladder is actually diseased, it was not so in the first instance, the disease in the bladder being altogether a secondary affection, which would never have existed if there had not been a previous disease in the kidneys.

But nothing is more common than to meet with disease in the kidney in the examination of the body after death, where there had been no complaints as to the bladder and urethra during life; and in many living persons there are indubitable signs of the kidneys being diseased, while the functions of the bladder and urethra are not in the slightest degree disturbed. It cannot be supposed that it is merely from a caprice of nature that one organ should sometimes sympathise, and sometimes not, with the diseases of another; and the question there-



fore arises, in what particular cases of renal disease is it that the secondary affections of the bladder are liable to occur?

I have already explained, that where the urine is overloaded with acid, showing itself in the form of lithate of ammonia, or brown or red sand, or where being alkaline it deposits crystals of the triple phosphate of ammonia and magnesia, it acts as a stimulus to the parts with which it comes in contact, and that an irritable state of the bladder is the consequence. But there is no reason to doubt that other unhealthy secretions of urine may produce the same result; and I am much inclined to believe that such is the real explanation of the affection of the bladder in the cases which are now under our consideration. In such of them as have fallen under my observation the urine has been always altered from its healthy condition, and its sensible qualities may be described as follows:—There is usually a copious secretion, the specific gravity being below the ordinary standard. But there is some variety in this respect; and I have known the specific gravity to be as high as 1,030. When tested with litmus paper it is generally found to be slightly acid; but occasionally it is alkaline; or it is sometimes alkaline, and sometimes acid; and, as I shall explain hereafter, the indisposition in it to become alkaline increases as the disease advances. When first voided the secretion is of a pale yellow color, opaque and turbid; sometimes having minute flakes of lymph floating in it. On the addition of nitric acid, or an exposure to heat, there is an abundant coagulation of albumen. When allowed to remain at rest there is a deposit of opaque matter, and not unfrequently of pus. The urine is always albuminous, but quite different in appearance from that which is secreted in the cases which were first described by Dr. Bright, and to which the attention of physicians has been of late years so much directed. The albuminous matter seems to be mechanically suspended, and not intimately blended and assimilated with it; as if the kidney were in a state of chronic inflammation, secreting urine from one set of vessels, and serum, or even pus, from others. Such, probably, is the real nature of the disease when once established, whatever it may have been in its origin; and you will find this view of the case to be confirmed by some facts to which I shall draw your attention presently.

The great majority of the patients who are thus affected are the male sex. Many of them seem to have been originally of a feeble, and what is commonly called a scrofulous, constitution. The disease, however, is by no means confined to persons of this description. It may be the result of calculus long impacted in the kidney. Not unfrequently it follows an attack of gonorrhœa, though I suspect that it may, for the most part, be traced to the treatment employed, rather than to the gonorrhœa itself. I allude to the injudicious exhibition of large doses of copaivi and cubebs, especially of the latter.

The patient complains of a too frequent inclination to void his urine; the period during which he can retain it varying from a quarter of an hour to an hour. There is a cutting pain referred to the neck of the bladder and urethra as the urine flows, and remaining for some time

afterwards: there is a constant sense of uneasiness above the pubes. Sometimes there is a dull, but rarely a severe, pain in one or both loins; at other times there is no pain in the loins whatever, or so little, that the patient scarcely thinks of mentioning it until he is questioned on the subject. In a few instances, masses of lymph, of the consistence and appearance of jelly, are found in the urine, which have evidently descended from the kidney. In one case the patient, who for two or three years had had no other symptoms than a too frequent desire to make water, and a deposit of pus in the urine, was suddenly seized with a most severe pain in the groin and testicle, so that I concluded that a renal calculus was making its way down the ureter. Instead of this, however, soon after the pain had suddenly terminated, there was found in the urine a mass of solid substance, resembling fibrine, of a pale-brown color, of a conical shape, smooth every where, except at the larger extremity, where it had an irregular and fringed appearance, as if it had been broken off from a larger mass. From this time he continued to suffer in the same manner, voiding similar masses of solid substance at various intervals, and in one of these attacks he died. His death took place in the country; and I believe that no examination of the body was made afterwards. From the account which I received, however, I was led to conclude that the immediate cause of death had been the retention of one of these masses of fibrine in the ureter.

As the disease advances the patient becomes feeble and emaciated; his complexion is sallow, and he is liable to attacks of nausea and even of vomiting, with a constant sense of languor and listlessness, and indisposition to both mental and bodily exertion. The desire to void the urine is incessant, and the sufferings caused by the accumulation of it in the bladder are more severe. As the bodily health becomes impaired, the disposition to secrete alkaline urine is increased; and this change is the usual precursor of the more urgent symptoms of affection of the bladder which mark the advanced stage of the disease. The urine deposits a large quantity of adhesive alkaline mucus: it is of an offensive ammoniacal odor, scalding the urethra as it flows, and producing a severe and constant pain in the hypogastrium. Even in the origin of the disease blood is sometimes discharged with the urine; but at this later period the disposition to hæmorrhage is increased. In some cases the urine generally is tinged with blood, and at other times there is an evacuation of pure blood, adding greatly to the patient's misery, not only in consequence of the clots becoming lodged in the urethra, and obstructing the passage of the urine, but by increasing the debility of an already weakened frame. The pulse becomes small and frequent, the tongue is dry and brown, or red and glossy, with a disposition to aphthæ; there is coldness of the extremities; and these symptoms usually precede the patient's dissolution. But it is otherwise in some instances, the patient dying almost suddenly even in a less advanced stage of his complaint. It would appear that not only in these, but in many other cases of disease of the kidney, the powers of the constitution become so impaired, that an accidental circumstance, which, if the patient were in health, would be productive of no more



than a temporary derangement of his system, may be sufficient to extinguish life. I have even known a case in which the introduction of a bougie having been followed by a severe rigor, the usual re-action never took place, and the patient died in consequence.

I have had several opportunities of examining the morbid appearances after death, where the patient had died in this last stage of the disease, and where the history of the case seemed clearly to prove that the kidney had been the only part affected in the first instance. One or both kidneys are found enlarged in size; unusually vascular; of a dark red color: soft and readily torn; the distinction between the cortical and tubular portions being less distinct than under ordinary circumstances. Interspersed throughout this diseased mass there are sometimes small deposits of a yellow substance, apparently unorganized lymph. The membranous capsule adheres more closely to the surrounding parts than to the kidney itself. Sometimes the kidney and ureter are imbedded in a mass of firm organized lymph, which involves all the neighboring structures. Frequently there are thin membranous bags of various sizes in the cortical substance containing, not urine, but a serous fluid. Abscesses are found in the kidney of various sizes, some of which may have made their way into the *pelvis* and *infundibula*. In one case one kidney was of double its natural size; and full of deposits of cheesy matter, resembling that which is found in scrofulous lymphatic glands, varying in quantity from the bulk of a pea to that of a horse-bean. The other was diseased in the same manner, but to a less extent. Sometimes an offensive mixture of pus and urine is found in the pelvis and ureter. Occasionally, but rarely, there are deposits of phosphate of lime adhering to the mammillary processes; more frequently there are similar deposits on the inner surface of the membranous cysts and abscesses. The mucous membrane of the bladder and ureters, in most instances, is every where of a dark-red color, from excessive vascularity, and exhibits the other appearances which have been already described in the history of inflammation of the mucous membrane. In a few cases, however, the appearance of inflammation is only in patches, and where it exists the mucous membrane is ulcerated. These ulcers occur more especially about the orifice of the ureter, the outer extremity of which is seen making a small nipple-like projection in the centre. If the patient survives this stage of the disease, the ulceration of the mucous membrane extends until it occupies a large portion of the internal surface of the bladder. Nor are these secondary diseases confined to the bladder. I have seen cases in which abscesses and ulcers of the prostate gland were apparently to be referred to the same source. I shall call your attention to this last-mentioned subject again in the next Lecture.

#### *Treatment of these Cases.*

You will easily believe that, in the advanced stage of the complicated disease which I have just described, little is to be done by art for

the patient's relief. The exhibition of the decoction of the root of *pareira brava*, with mineral or vegetable acids, may render the urine less alkaline, and somewhat restrain the secretion of the adhesive mucus from the inflamed mucous membrane. Large doses of opium may, in some degree, mitigate the patient's sufferings, and the prudent exhibition of wine may for a time uphold his failing powers. But this is all; and the disease will pursue its course to a fatal termination in defiance of all your efforts to arrest its progress. Even when you are consulted at an earlier period, you will find, in many cases, that the best exertions of your skill end in disappointment. It seems as if when the kidney has been for a considerable time the seat of disease, even though no actual organic change of structure has taken place in it, it were almost incapable of recovery, and, at all events, if one drop of matter be deposited in its substance, this must be regarded as the rudiment of a large abscess, and as leading, almost inevitably, to the worst ultimate result.

There are, however, cases in which much may be accomplished under a judicious treatment; and I have notes of several in which patients who had been great sufferers for one or two, or even a greater number of years, were apparently restored to health. The remedies which I have found useful have been few in number, and the history of them may be comprised in a few words.

If the urine be more than usually loaded with lithic acid, some advantage may be derived from the exhibition of moderate doses of the *liquor potassæ*, or the bicarbonate of potass. But this is seldom necessary, and alkalies ought to be administered with great caution where there is danger of the urine becoming alkaline, and where this change in the quality of the secretion is likely to be followed by such serious consequences as those which I have described. Whenever the urine is already alkaline, or has a tendency to be alkaline, of course the opposite treatment is indicated, and the mineral acids should be given in larger or smaller doses according to circumstances.

In robust persons, where the disease is but little advanced, and there is much pain in the loins, a moderate quantity of blood may be taken from the loins by cupping. But there can be no greater practical error than to suppose that because a disease partakes of the inflammatory character, it is therefore to be relieved by blood-letting. Many such diseases are liable to occur in persons of debilitated constitution, and have a tendency to increase the debility in which they have originated, being at the same time aggravated instead of being relieved, not only by the loss of blood, but by active depletion in other ways. In some instances I have known much good to arise, apparently, from blisters applied near the affected loin, or from issues made with caustic, or setons in the same situation. But even these should not be had recourse to without due consideration; and in persons of a delicate habit I am inclined to restrict their use to those cases in which the pain in the loins is considerable, or in which there is a discharge of pus, or of masses of unorganized lymph from the kidney.

For the same reason that depleting remedies are to be used with



caution, it is never desirable that the patient should be placed on a very low or abstemious system of diet. He should have animal food daily, with the addition of a moderate quantity of ale or wine. He should, if possible, reside on a dry gravelly soil rather than in a low and damp situation; or he may derive benefit from a residence at the sea-side.

The *uva ursi* has a doubtful reputation as a remedy in cases of disease of the bladder, some believing it to be of great efficacy, and others attributing to it no efficacy whatever. My own experience would lead me to suspect that its influence is confined to the cases of which I am now treating, but that in these it may in some instances be employed with much advantage. It must be administered, however, in larger doses than those which I find to be in common use. Thus from ℥ j. to ℥ ij. of the extract may be given in pills daily, or from ℥ viii. to ℥ xvi. of the following infusion, which has appeared to me to be more efficient than the extract.

℞ *Foliorum uvae ursi* ℥ j.  
*Aquæ distillatæ ferventis* ℥ xvij.  
*Macera per horas ij, dein decoque ad* ℥ xvj. *et cola.*

But neither the extract nor the infusion produce an immediate improvement; and if the experiment of taking this medicine be begun the patient must make up his mind to persevere in it for a very considerable time, before he can form an opinion as to the result.

There is, however, another remedy, which, if my observations be correct, is much more to be relied on than the *uva ursi*, namely, the *diosma crenata*, or buchu. Of this, also, I am led to believe that its efficacy as a medicine is limited to this particular class of cases, and in these I cannot doubt that I have seen it productive of the most beneficial effects. From ℥ iss. to ℥ ij. of the infusion of the *diosma* (of the Pharmacopœia) may be given twice or three times daily. The operation of it is slow, like that of the *uva ursi*. Many weeks must elapse before there is any sensible amendment, so that it is needless for the patient to take it unless he fully intends to continue to do so for a very long period. I have known persons who, with some brief occasional intermissions, have persevered in its use, slowly but uniformly mending, even for two or three years. Where there is a superabundance of lithic acid in the urine, small doses of the bicarbonate of potass, or *liquor potassæ*, may be added to the infusion; and where the urine is alkaline, or has a tendency to be so, it may be given in combination with the mineral acids.

Another remedy, which I have administered with great apparent advantage in these cases, is the *tinctura ferri muriatis*. It may be given in doses of ℥ viij. to ℥ xv. twice daily, either in any simple vehicle, or in combination with the infusion of the *diosma*. In the latter case, the tincture may be given for a month or six weeks at a time; and this course may be repeated occasionally, the infusion being still administered in the intervals.

Before I conclude the present Lecture, I feel it to be my duty to

caution you against the unnecessary introduction of instruments into the bladder in these cases. It may be right, probably it is so in most cases, in the first instance, to introduce a sound or catheter, so as to ascertain whether there be an obstruction in the urethra, or a calculus in the bladder, or whether the patient retains the power of emptying the bladder by his own efforts. But if these questions be determined in the negative, it is better that you should abstain from the further use of instruments. Every examination gives the patient a good deal of pain at the time, and it often happens that much distress: both local and constitutional, follows, which may not subside for two or three days. Rigors also are more likely to occur after such examinations, than in ordinary cases of urinary disease; and I have already observed, that these are attended with actual danger in all cases in which the powers of the system are exhausted by long continued disease of the kidney. Where it is thought advisable to examine the urethra and bladder by the introduction of instruments, twenty or thirty minims of tincture of opium may be administered immediately afterwards. This will rarely fail to prevent the occurrence of a rigor, and no inconvenience, which the laudanum may occasion, can be put in competition with the great advantage arising from its use.

---

## LECTURE VII.

### *Inflammation of the Prostate Gland.*

AFFECTIONS of the prostate gland are met with chiefly in those who are advanced in years. This organ, however, is not altogether exempt from disease in earlier life. In cases of gonorrhœa it not unfrequently happens that the discharge from the urethra suddenly ceases, and that the inflammation, leaving the part originally affected, attacks the prostate. The peculiar symptoms which occur in the cases to which I allude cannot well be explained in any other way, and it may be observed that they never occur except in the male sex.

The patient observes that the gonorrhœal discharge stains his linen much less than it did before, or that it ceases altogether; and he experiences at the same time a frequent inclination to void his urine, and a difficulty in voiding it. He complains of uneasiness and pain, referred to the neck of the bladder, and extending forward in the course of the perineum and urethra, and aggravated on each attempt to make water. In some cases there is a complete retention of urine. The impulse to make water is then violent and irresistible; and it is attended with more suffering than in ordinary cases of retention, on account of the contents of the bladder being pressed with force against the inflamed and tender prostate. There is a sense of fulness in the pe-



rineum and rectum ; and the prostate is manifestly tender when examined from the rectum with the finger.

Not uncommonly suppuration takes place, and an abscess forms, of which the symptoms, in the first instance, are generally obscure. As the abscess advances, the perineum becomes tender, and there is a perceptible though slight tumefaction and hardness in some one part of it. The abscess, if left to take its own course, sometimes bursts internally—that is, into the urethra; more frequently it makes its way through the fascia, cellular membrane, and muscles of the perineum, and bursts through the external skin.

These local changes are attended with no small degree of disturbance of the general system. The pulse is frequent, the skin hot, the tongue furred, and the formation of matter is often indicated by rigors.

The first object of the surgeon should be to prevent suppuration. The patient should remain in bed, in the horizontal posture. Blood is to be taken from the loins, or perineum, by cupping; and the cupping should be repeated, or not, according to circumstances. Cupping on the perineum, however, can be performed only by a dexterous cupper; and where such an one cannot be procured, leeches must be applied instead. An active aperient should be exhibited, followed by an opiate in the form of an enema or suppository; and the patient will often derive the greatest benefit from the use of calomel taken in pills in sufficient quantity to subject him to the mercurial influence. If there be a retention of urine, the gum catheter, without a wire or stilet, may, in almost every case, be readily passed into the bladder. It is better to use a very small catheter, and to introduce it again, whenever it is necessary to do so, than to leave it constantly in the urethra and bladder. If there be reason to believe that abscess is formed, you should endeavor to procure an external discharge for the matter, in order to prevent it bursting into the urethra. If such symptoms as I have described exist, and go on for some time increasing, and you discover a fulness and tenderness of the perineum, do not wait for any more certain indication of the abscess; but introduce a lancet, in the direction indicated by the tenderness and swelling. It will often be necessary to pass it quite up to the shoulders, or even to the handle, before you reach the abscess. But you may do this fearlessly. There is no danger of any ill consequences from such a puncture. If there be abscess, you will by this proceeding immediately relieve the distress which the patient suffers, at the same time that you prevent further mischief. If, on the other hand, there be no abscess, the puncture does not make the condition of the patient worse than it was before. Indeed, partly from the loss of blood, partly by removing the tension of the soft parts of the perineum, it is generally useful to the patient, even when it does not answer the purpose of allowing the escape of matter.

But abscess of the prostate gland may take place in young men under other circumstances, besides those which I have just mentioned.

A man about thirty years of age was received into the hospital, voiding his urine every twenty or thirty minutes, and complaining of

an aching pain in the loins; but of no pain anywhere else. The urine deposited a small quantity of yellow puriform sediment. He said that the symptoms had begun two years ago, and that in the commencement of the disease the urine had been tinged with blood. I prescribed the use of an opiate clyster every night; and under this treatment the inclination to make water became less frequent.

About a month after his admission into the hospital, the patient was suddenly seized with symptoms of apoplexy, and he died in the course of a few hours. In the examination of the body, we discovered an abscess of the size of a large walnut, occupying the posterior part of the prostate gland, and extending into the space between the bladder and *vasa deferentia* behind the neck of the bladder. On slitting open that portion of the urethra which passes through the prostate, a large irregular ulcerated orifice was discovered behind the *verumontanum*, through which the probe passed at once into the cavity of the abscess.

I had the opportunity of observing the same morbid appearances in the *post-mortem* examination of a patient who died under the care of Dr. Prout and myself, and who had long labored under symptoms of disease at the neck of the bladder. I conclude that in the following case, also, the seat of the abscess was in the prostate gland.

A gentleman, about thirty years of age, consulted me, complaining that the urine flowed slowly, and with difficulty. I introduced a gum catheter, and found a considerable quantity of urine left in the bladder, after he had voided what he could by his own efforts. There was no stricture of the urethra, and the use of the instrument did not relieve the difficulty of making water, so that it was necessary to introduce it two or three times daily. When this plan had been persevered in for three or four days, there took place one evening a severe attack of shivering. The next day it was discovered that the urine deposited a considerable quantity of pus. The patient could now make water and empty his bladder without the assistance of the catheter: however, he was directed not to do so, but to use the catheter for himself every six or eight hours. The urine continued to deposit the same purulent sediment, but the quantity of it gradually diminished, and in the course of two or three weeks it disappeared entirely; and no symptoms being left, the further use of the catheter was not considered necessary. I have seen this gentleman several times since, on other occasions, and, as far as I know, he has never had any return of the complaint.

In the case which I have mentioned as having been attended by Dr. Prout and myself, in addition to the abscess at the neck of the bladder, there were abscesses and extensive disorganization of the kidneys. I may here refer you to what I observed as to the co-existence of disease in the kidney and bladder in the last Lecture. We cannot well doubt the existence of this combination in the following case, although the fact was not absolutely proved by dissection.

A young man had symptoms which led me to suspect the existence of abscess of the prostate. Under these circumstances, he was seized with a rigor, with pain in the loins, extending downwards in the



course of the ureter; in short, with symptoms like those produced by the passage of a calculus from the kidney into the bladder. These symptoms suddenly ceased, and he voided not a calculus, but a mass of lymph and pus, and some blood, which came away with the urine. I now was led to believe that I had been mistaken in my notion as to the original seat of the disease, and to suspect that the neck of the bladder had been affected only from sympathy with the kidneys; but soon afterwards another abscess presented itself in the perineum, which I opened with a lancet, proving that my original opinion had not been incorrect. This gentleman went into the country, and soon afterwards died laboring under a severe diarrhœa. Unfortunately, the body was not examined after death.

When a patient labours under such symptoms as would lead you to believe that an abscess has formed in the prostate, communicating with the neck of the bladder, you should direct him not only to be as quiet as possible, but to remain altogether in the horizontal posture. You should instruct him in the use of the gum catheter; and he should introduce it for himself whenever he has the desire to void his urine, so that he may always make water by means of the catheter, and not by his own efforts. In some instances I have caused the gum catheter to be constantly retained in the urethra and bladder, until the abscess has healed: but this plan not unfrequently irritates the neck of the bladder; and the occasional introduction of the catheter is, for the most part to be preferred. In some instances, even this excites irritation, and the catheter must be omitted altogether.

Besides this, you must attend to the state of the patient's general health. There is usually in these cases a weak state of the constitution; the patient is probably of a scrofulous habit; and the healing of the abscess may be promoted by the exhibition of the sulphate of quinine, or steel, or other tonics. I have been led to believe, in some cases, that good has been derived from the internal use of the cubebs pepper, twenty grains of which may be administered three times daily. It seems to act as a gentle stimulus to these parts, probably operating on the disease much in the same way as Ward's paste operates on abscesses and fistulæ, and ulcers of the rectum.

---

I have mentioned formerly that an enlargement of the prostate gland sometimes occurs as a consequence of stricture of the urethra, subsiding spontaneously after the stricture is cured. The same thing may happen after gonorrhœa, especially where the patient has neglected his complaint; hunting and using other violent exercise before the discharge has ceased. In one case of this kind the prostate was enlarged (apparently) to four or five times its natural size, producing much uneasiness from pressure on the rectum, but not in any degree interfering with the functions of the bladder. The disease subsided; but very

gradually; and in the course of three or four years no perceptible enlargement remained.

I shall mention the particulars of another case, in which the patient attributed the disease to an attack of gonorrhœa at a former period, and which is also of some interest on account of its having immediately yielded to the treatment employed.

A gentleman, thirty-one years of age, consulted me, with Mr. Turner, King Street, Holborn, under the following circumstances. He complained of pain, referred to the perineum, hypogastrium, and back part of the pelvis, extending down the thighs. The pains, however, were not very severe. He had a sense of obstruction in the rectum on the passage of the fæces. He was tormented by the desire to void his urine more frequently than is usual; but he had no difficulty in voiding it: he could empty his bladder by his own efforts, and the urine was transparent and healthy. The urethra was free from disease; but the prostate gland, when examined from the rectum, was found to be enlarged to two or three times its ordinary size. The patient said the disease had existed in its present form for three or four years; but that he could nevertheless trace its origin to a severe gonorrhœa under which he had labored ten years ago. He had no other complaints. We prescribed for him two grains of the iodide of potassium to be taken three times daily. This plan was pursued under Mr. Turner's direction for about seven weeks, when I was again consulted. He was now nearly free from pain; voided his urine not more frequently than other persons, and as much as  $\frac{3}{4}$  x. at once. The prostate gland was reduced to its natural size. As a matter of precaution I advised that the iodide of potassium should be taken for another fortnight.

#### *Chronic Enlargement of the Prostate Gland.*

I have said that the prostate gland is more frequently the seat of disease in old age than it is in youth.

At different periods of human life different changes take place in the condition of the organs of which the system is composed; and none of these are more remarkable than those which show that the individual has entered on that downward course, which is to end in his dissolution.

When the hair becomes grey and scanty, when specks of earthy matter begin to be deposited in the tunics of the arteries, and when a white zone is formed at the margin of the cornea, at this same period the prostate gland usually, I might perhaps say invariably, becomes increased in size. This change in the condition of the prostate takes place slowly, and at first imperceptibly, and the term *chronic* enlargement is not improperly employed to distinguish it from the inflammatory attacks to which the prostate is liable in earlier life.

In the *post-mortem* examination of persons, who die laboring under this disease, we find the prostate sometimes enlarged only in a slight degree; but frequently it is two or three times, and occasionally even



ten or fifteen times, its natural size. We also find more or less alteration in its texture. For the most part it is harder than natural; but, in a few instances, it is the reverse. In some instances, the enlarged prostate retains nearly its natural form; and, under these circumstances, if you lay open the cavity of the bladder, you find the existence of the disease marked only by the appearance of an uniform circular projection surrounding the internal orifice of the urethra. More frequently, however, the form of the prostate is altered, and it no longer presents the appearance of a chestnut placed at the neck of the bladder, and perforated by the urethra. Posteriorly the lateral portions of the prostate are found extending on the outside of the *vesiculæ seminales*, between the bladder and the rectum. That part of the prostate, also, which is situated between the *vasa deferentia* and the neck of the bladder, and to which Sir Everard Home has given the name of the third lobe, becomes enlarged also, forming a tumor projecting forward into the cavity of the bladder, behind the inner orifice of the urethra. This tumor varies in size from that of a horse-bean to that of an orange. When small, it is of a conical form, with the apex of the cone projecting into the bladder, and the basis being continued into the rest of the prostate. When large, the basis is often the narrowest part, and it swells out so as to have a puriform figure towards the bladder. In some instances, by the side of that which I have just mentioned, there is another tumor, formed by one of the lateral portions, also projecting into the bladder.

The canal of the urethra, where it passes through the enlarged prostate, is generally flattened; and when the latter is divided transversely, the urethra appears like a slit, rather than like a cylindrical canal. Not unfrequently the enlargement of the prostate so alters the form of the urethra, that instead of pursuing a straight course through the gland, it is inclined first to one side and then to the other. You would expect the urethra to be rendered narrow in consequence of the increased bulk of the parts by which it is surrounded; and so it is in many instances: in others, however, it is actually wider, being dilated into a kind of sinus, where it lies in the centre of the prostate. I have known such a sinus to exist, of a sufficient size to contain two or three ounces of fluid. In addition to these changes, the natural curve of the urethra, as it approaches the bladder, is increased. It forms a portion of a smaller circle. It also becomes elongated, so that the distance between the orifice on the glans penis and the cavity of the bladder is greater than natural. This is the necessary consequence of the increased size of the prostate; and in this manner as much as an inch or an inch and a half is sometimes added to the length of the urethra.

Malignant diseases of the prostate are of a very rare occurrence, and it is certainly a great mistake to apply the term scirrhus to the cases which are now under our consideration. The chronic enlargement of the prostate may be said to be a disease of a peculiar kind, having no exact resemblance to what we meet with in any other organ. It may, however, in some respects, be compared to the chronic en-

largement of the thyroid gland, known by the name of bronchocele. Like the latter, it is generally slow in its progress; and frequently, after having reached a certain point, if proper treatment be employed, it remains almost stationary for many years. It is on the whole a rare occurrence for it to terminate in ulceration or abscess; and the symptoms, to which it gives rise, are, with a few exceptions, to be referred to the influence which the disease exercises over the functions of the parts in the neighborhood.

*Symptoms of the Chronic Enlargement of the Prostate Gland.*

There are but few individuals who, in the later period of life, do not suffer some degree of inconvenience in consequence of the enlarged state of the prostate. The bladder becomes irritable, and there is a more frequent inclination to void the urine than under ordinary circumstances: at the same time the urine is ejected in a slower stream. These symptoms come on very gradually, and for a considerable time attract but little of the patient's attention. A sudden and violent aggravation of them may, however, take place at any period. In consequence of exposure to damp and cold, or some irregularity as to diet, and, very frequently, as a result of venereal excitement at a time when the sexual powers are beginning to decline, there is an increased determination of blood to the prostate, which was before enlarged, causing it to become still further increased in size. The expulsion of the urine then becomes more difficult than it was before, and soon is prevented altogether. There is, in short, a complete retention of urine.

The symptoms of retention of urine, from enlargement of the prostate, are not very different from those which occur where the retention is the consequence of stricture, but the termination is different. I never saw a case in which, under these circumstances, the bladder had given way, as sometimes happens where there is a retention from stricture; but I am informed that such a case has occurred, and that the bladder, ruptured at its fundus, is preserved in the Museum of St. Bartholomew's Hospital. It is evident that the urethra itself cannot be ruptured, as the urine does not even enter it, the obstruction being altogether posterior to it. But the patient cannot survive a retention of urine from this cause, any more than he can survive a retention of urine from other causes, beyond a certain period of time. The powers of his nervous system become exhausted; there is a cessation of local suffering; the tongue becomes dry and black, coma supervenes, and the symptoms terminate in death. Mr. Travers has informed me of a few cases of long-continued retention in consequence of enlargement of the prostate, which fell under his observation, in each of which the mucous membrane was converted into a slough, and was found, after death, lying loose in the cavity of the bladder.

The prostate being once enlarged, it is evident that a very small addition to its bulk may be sufficient, under certain circumstances, to



prevent the expulsion of urine from the bladder. Hence it is, that no individual who labors under this disease can be regarded as being at any time free from the danger of a complete retention of urine. This, however, where surgical assistance can be procured, and proper treatment is employed, is for the most part only a passing evil. The patient is relieved by the judicious administration of art, and a considerable time may elapse before he experiences another similar attack.

But he is liable to other evils, which, although less formidable in appearance, and more insidious and gradual in their progress, lead, if neglected, to a no less fatal result. As the disease advances, the urine is ejected in so slow a stream that it drops perpendicularly downwards from the orifice of the urethra. It is voided at short intervals—every hour, or half hour, or every twenty minutes; or, perhaps, it dribbles away involuntarily. This latter symptom occurs especially when the patient is in bed, and is a source of great anxiety and distress. At the same time, a slight degree of pain is experienced in the course of the urethra, and in the glans penis. At first the urine is clear, in no way different from that of a healthy person; then a few small threads of flocculi are seen floating in it; and afterwards it becomes slightly turbid and opaque. If, under these circumstances, you introduce the catheter into the bladder, you find a simple explanation of all these symptoms. Although the patient is continually voiding his urine, and gets rid of the usual quantity in the twenty-four hours, his bladder is never empty. A certain portion of urine is always stagnant in it, the quantity of the residuum varying, in different cases, from one or two ounces, to one or two pints, or even more.

Now, I do not mean to assert, that all persons, in whom the prostate is enlarged, lose the power of emptying the bladder, but I certainly believe that this happens in the greater number of instances; and you will soon learn how important is the knowledge of this fact, whether it be viewed in connection with pathological science or practical surgery.

When the prostate gland is much enlarged, the tumor, projecting into the bladder, irritates the mucous membrane, which becomes in consequence affected with chronic inflammation. The same effect is produced, and to a still greater extent, by the constantly distended state of the bladder. The inflamed surface secretes a thick, tenacious mucus, having an offensive ammoniacal odor, which is in itself a source of irritation, aggravating the inflammation in which it had its origin. I have already explained to you what are the symptoms and the consequences of chronic inflammation of the mucous membrane of the bladder, and you will easily understand how much this complication must add to the patients sufferings and danger. Chronic inflammation of the mucous membrane of the bladder is, indeed, one of the most frequent causes of death in neglected cases of enlargement of the prostate; and where it does not operate directly, it frequently operates indirectly, so as to produce a fatal result. Small earthy deposits are formed in the alkaline mucus; many of which, instead of

being expelled by the urethra, fall to the bottom of the residuary urine: these, increasing in size, and ultimately becoming cemented together, lay the certain foundation of a calculus in the bladder. I shall give you a more particular history of vesical calculi, produced under these particular circumstances, in a future Lecture.

In all cases of enlarged prostate, in which the disease is allowed to take its own course, the muscular tunic of the bladder becomes increased in thickness and strength. The reason of this is obvious. The bladder has been called on to make unusual efforts; and all muscles, under these circumstances, acquire an increase of size. The mucous membrane frequently becomes protruded through the triangular spaces between the muscular fibres, forming pouches, or cysts, similar to those which I have already mentioned as occurring in neglected cases of stricture of the urethra. These cysts are generally small, but occasionally they attain a large size; and it is remarkable that they sometimes contain what appears to be pure pus, while the bladder, with which they communicate, contains only urine. An old gentleman consulted me, labouring under disease of the prostate gland. He had a frequent inclination to void his urine; and on introducing the catheter, immediately after he had voided it, about three or four ounces of urine were found to have been left in the bladder. But what he chiefly complained of was an uneasy sensation in the rectum. He gave it the name of a *worming* sensation, and said it was as if a worm were crawling between the bowel and the bladder. One day, after drawing off the usual quantity of nearly clear urine, on introducing the catheter a little further, to my surprise, half a pint of pus came away. The same thing occurred two or three times afterwards. At first I was led to believe that the catheter had entered the cavity of a common abscess. But it was not long before I had the opportunity of ascertaining the real nature of the case. The patient died; and on examining the body, the prostate gland was found a good deal enlarged; there were three cysts, of various sizes, communicating with the bladder, and formed in the manner which I have just described. The largest of these were situated between the bladder and the rectum, and contained half a pint of pus. There was no ulcerated surface: and the pus was evidently secreted by the mucous membrane of which the cyst was composed.

It is not uncommon, on making a section of an enlarged prostate gland, to find in its substance several small collections of a muco-purulent fluid, having the appearance of pus mixed with the natural secretion of the gland. Sometimes there is a distinct abscess, which attains a very considerable size, presenting itself, at last, in one or another situation, according to circumstances. A gentleman who had labored under enlargement of the prostate for many years complained of uneasy sensations about the hips, extending down the thighs. At the same time his pulse was somewhat accelerated, and he was subject to attacks of chilliness, not amounting to rigors. He was in the habit of introducing the catheter; and he observed that it entered the neck of the bladder with some degree of difficulty, as if



the urethra, where it passés through the prostate, was contracted in the diameter. These symptoms had existed for many months, when at last, while he was in the act of using the catheter, an abscess burst, and several ounces of pure pus were discharged by the urethra. I had another patient who complained of similar sensations, and also of an increased difficulty in introducing the catheter, so that I was led to believe that an abscess had formed in the prostate. When he had continued in this state for many weeks, an abscess burst into the rectum, discharging a considerable quantity of pus, and this was followed by the relief of all the symptoms. In a third case, the patient, not content with leading the quiet life which I had recommended, returned to his favorite pursuit of hunting. The formation of an abscess in the prostate was the consequence. When I was again consulted, the abscess had presented itself in the perineum. I opened it with a lancet, and some ounces of pus escaped. However, the whole of its contents were not freely discharged through the artificial opening, and the abscess afterwards burst into the urethra. For a long time matter continued to flow in large quantity by the orifice in the perineum, and by the urethra also. At last the quantity of discharge underwent a sensible but gradual diminution. It had not, however, entirely subsided when I last saw the patient, which was more than two years from the period of the abscess having been opened.

I have said that it is not uncommon to find on dissection that supuration had begun to take place in the substance of the prostate, probably in its excreting ducts ; and I conclude that such is the origin of the abscess in the greater number of cases in which an abscess is formed. It is, however, not improbable that in some instances supuration may take place in the cellular membrane to an enlarged prostate, as an abscess connected with a diseased lymphatic gland is often situated, not in the substance of the gland, but on its surface, in the cellular membrane between it and the skin.

Ulceration of the surface of that portion of the prostate which projects into the bladder occurs occasionally in the very advanced stage of the disease. An elderly gentleman, who labored under disease of the prostate gland, and was in consequence unable to empty his bladder by his own efforts, was in the habit of relieving himself by the introduction of the catheter twice or three times daily. He had gone on in this way for a year and a half, when he began to experience great uneasiness as soon as a very few ounces of urine were collected in the bladder, and was, in consequence, under the necessity of introducing the catheter four or five times in the twenty-four hours ; at the same time that the urine became dark-colored, as if from a small admixture of blood. These symptoms gradually increased, until at last the accumulation of even two or three ounces of urine produced violent spasms of the bladder and abdominal muscles, attended with such agonizing pain that he could not forbear screaming. The introduction of the catheter relieved him for a time ; but in the course of one or two hours the pain and spasms returned as severe as before, and continued until the catheter was again had recourse to. He remain-

ed in this state nearly three weeks, and at the end of that period died, as if exhausted by excessive suffering. On examining the body after death, the prostate gland was found much enlarged. The posterior middle portion of the prostate projected into the bladder, forming a tumor as large as a walnut, and one of the lateral portions projected in the same manner of a still larger size. The surface of each of these tumors was in a state of ulceration. The mucous membrane of the bladder was almost of a black color, in consequence of its vessels being very much loaded with blood. In another patient, in whom symptoms of the same kind, but less in degree, had existed for more than a year before the disease terminated in death, the prostate was found to be ten or twelve times its natural size, making a large circular projection into the bladder, round the internal orifice of the urethra. Nearly the whole of this portion was superficially ulcerated, and in some places the ulcerated surface was incrustated with a thin layer of coagulated lymph.

A prostate gland which is extensively ulcerated is liable to bleed; but this may be the case also with a prostate which is not ulcerated, or which is ulcerated only to a small extent. Hæmorrhage may, in fact take place from an enlarged prostate as from any other tumor. Generally, the hæmorrhage is small in quantity; but sometimes it is abundant and alarming. A gentleman labored under disease of the prostate. He was in the habit of introducing the gum catheter himself. One evening he observed that blood flowed with the urine. In the course of the night he called me up, and I found him with the bladder enormously distended, prominent in the abdomen as high as the navel, and blood still flowing from the urethra. I introduced a large catheter, but no urine escaped. The bladder was distended, not with urine, but with blood. I directed the patient to lose blood by cupping in the loins, and to remain quiet; and, under this treatment, the hæmorrhage ceased; not, however, until a very large quantity of blood had been lost. The catheter was afterwards introduced three or four times daily. The blood by degrees became dissolved in the urine, and, after two or three weeks, the latter was as clear as it had been before the attack of hæmorrhage took place. But the pulse was frequent, the skin hot, the tongue dry and brown, and the patient survived the hæmorrhage only a month. In the *post-mortem* examination, I found the mucous membrane of the bladder extensively inflamed; a large tumor of the prostate projected into the bladder; and it appeared to me that I could discern the exact spot in which the vessels of the tumor had given way, and from which the hæmorrhage had proceeded. I have seen many other cases of hæmorrhage from the prostate. I had one patient, in particular, who had two attacks of hæmorrhage even to a greater extent than in the case which I have just related, from both of which, however, he recovered, under the treatment which I shall describe hereafter.

I have already explained in what manner the bladder suffers in consequence of enlargement of the prostate gland. The kidneys suffer also, and it is this which principally baffles our skill, and renders vain



all our efforts for the patient's relief, in neglected cases of this description.

In a former Lecture I have stated, that disease of the kidney is a frequent consequence of a neglected stricture of the urethra. The renal affections which arise from this cause are very similar to those which arise from disease of the prostate. The same description will apply to both orders of cases; and it is for this reason that I only briefly alluded to the subject as connected with disease of the urethra, referring you to the present Lecture for further information on it.

These secondary renal affections are various.

1. In many cases the secretion of urine is considerably augmented. There is a very large flow of urine of a pale straw color, and this may take place without any considerable alteration in the structure of the kidneys that we can discover on dissection. In one instance, in which the urine had been such as I have described for some years before the patient died, both kidneys were found of a pale color, and the glandular structure of them was much diminished in bulk, the pelvis being at the same time considerably dilated. In other respects, the appearance of these organs was the same as under ordinary circumstances.

2. There are other cases, in which the secretion of urine is much diminished in quantity or wholly suppressed. My attention was first called to this fact by the following case, which came under my observation many years ago. A man, who was not much past the middle period of life, but who was old in constitution, had symptoms of enlargement of the prostate gland for two years or more before I saw him. At this time he was harassed by an incessant desire to void his urine. But the quantity which he voided at one time was very small, so that the whole amount of what was discharged in twenty-four hours did not exceed half a pint. He complained also of pain in the loins, extending across the abdomen. He was subject to occasional attacks of chilliness, but his skin was usually hot and dry, and he had a frequent pulse. On introducing a catheter into the bladder, I drew off half a pint of urine, although the patient had made water immediately before the operation. The introduction of the catheter was repeated twice daily; and under this treatment the quantity of urine drawn off gradually diminished; so that, at the end of a fortnight, he was enabled to empty his bladder by his own efforts. As the quantity of urine retained in the bladder became smaller, so the secretion became more abundant, until it amounted to two pints or more in the course of the day and night. Under these circumstances the patient returned to his home in the country, and I have had no opportunity of learning in what manner the case terminated.

I attended a gentleman, about seventy years of age, with disease in the prostate. I had instructed him in using the catheter for himself, and he drew off his urine regularly. Some months after I first saw him, he observed that he drew off less urine than usual; and that the whole quantity of urine secreted in the day and night was much diminished. There was no distention of the bladder. The catheter

entered the bladder readily, but drew off only a very small quantity of urine. At last the secretion of urine was reduced to three or four ounces daily, and I believe to less. Now another order of symptoms began to show themselves. The legs became œdematous: this was followed by difficulty of breathing; the patient was almost suffocated, except when his shoulders were very much raised by a number of pillows under them. Then he became drowsy; afterwards comatose, with dilated pupils. There were all the symptoms of effusion of fluid into the chest and ventricles of the brain; and with these symptoms he died. I have no written notes of the case: but if my recollection be accurate, not above ten days or a fortnight elapsed from the time when the diminution of the secretion of urine was first observed to the day of the patient's death. Unfortunately, the relations would not permit the body to be examined.

I was consulted concerning another case, which may throw some light on the one which I have just related, in conjunction with my friend Mr. Stanley. We had some difficulty at first in determining whether there was actually a suppression of the secretion of urine in the kidneys, or a retention of it in the bladder; and this difficulty was increased by the circumstances of the patient being unusually corpulent; so that, even if the bladder had been a good deal distended, we should have been scarcely able to perceive the usual prominence above the pubes. At last, however, we satisfied ourselves that the catheter drew off no urine, because there was none in the bladder. The patient died, and Mr. Stanley examined the body. He found a growth of medullary fungus immediately behind the internal orifice of the urethra, projecting into the bladder, and extending to the orifices of the ureters. It seemed that this disease, at the termination of the ureters, had impeded the flow of urine into the bladder from the kidneys, both ureters being much enlarged, and distended with urine through their whole extent. The kidneys were very soft and vascular but contained no large accumulation of urine.

As such cases are not generally noticed by surgical writers, I shall not think that I occupy your time unnecessarily in mentioning the particulars of another, which, allowance being made for the difference of the original disease, is similar to those which I have just described, and will serve to illustrate further the influence which an obstruction of the ureters exercises over the functions of the kidneys. I was desired to visit a gentleman between forty and fifty years of age, who was represented to me as having been long troubled with a stricture of the urethra, and as labouring at this time under a retention of urine in the bladder. On introducing a small catheter, I discovered an obstruction of the membranous portion of the urethra, but with some difficulty I made the instrument enter the bladder. The patient had voided no urine for the two or three previous days, nevertheless not more than a few drops were drawn off by the catheter. The operation was repeated two or three times afterwards, and with the same result. At this time the patient was perfectly sensible, and gave Sir Henry Hallford, Dr. Somerville, and myself a distinct history of his



complaints. In the course of the next twenty-four hours, however, his mind began to wander, and at the end of three days more he died comatose.

On examining the body, we discovered a very narrow gristly contraction of the urethra, which was evidently a disease of long standing. The urethra behind the contraction was much dilated. The whole of the soft parts behind the stricture, surrounding the urethra, prostate gland, and bladder as far back as the ureters, were much thickened, agglutinated, and indurated, apparently from the effusion of lymph at some former period, which had become organized. This change from the natural condition was greatest where the right ureter enters the bladder, and the orifice of this canal was in consequence so much contracted that scarcely the smallest probe could be introduced into it. The whole of the right ureter, above the contraction, was dilated to the size of the small intestine, the mucous membrane being thicker than under ordinary circumstances, and the inner surface bearing marks of slight inflammation. The orifice of the left ureter was also contracted; but in a less degree than that of the right; and the ureter itself dilated to two or three times its ordinary size.

Both kidneys were unusually vascular, and of a soft consistence. In the right kidney there were two cysts containing serum, not communicating with the infundibula. A small quantity of discolored fluid was found in the pelvis; but there were not traces of urine either in the kidneys or ureters, or bladder. The *vesiculæ seminales* were involved in the mass of organized lymph which surrounded the neck of the bladder, and converted into a gristly mass, with scarcely any remains of their natural stricture. The ventricles of the brain contained an ounce and a half of serous fluid; and about four ounces of fluid were found in the cavity of each plura.

3. In cases of diseased prostate gland, as in all other cases in which there has been for a long time a considerable impediment to the flow of urine from the bladder, the ureters are liable to become dilated, the pelvis of the kidneys and infundibula being dilated afterwards. I shall describe this peculiar change in the structure of the kidney more at length when I call your attention to the subject of renal calculi.

4. In other cases, both of stricture of the urethra and of enlargement of the prostate gland, the kidneys become diseased in consequence of inflammation which had begun in the mucous membrane of the bladder, extending upwards to those organs along the ureters. The morbid appearances, which the kidneys present under these circumstances, have been already described in the Lecture on diseases of the bladder.

5. But it is not uncommon in cases of stricture of the urethra for the kidneys to exhibit on dissection appearances of disease, although the membrane of the bladder and ureters is but little altered from its natural condition. These appearances are such as chronic inflammation might be expected to produce, where it had not been preceded by inflammation extending up the mucous membrane; and they do not in any material degree differ from those which I described in the fifth

Lecture, when I drew your attention to that peculiar class of cases in which there are symptoms of irritable bladder arising from disease in the kidneys.

In all the cases which have been just enumerated the ureters are affected in the same manner, being in a greater or less degree dilated, but one generally more than the other; while the effects produced on the kidneys vary according to circumstances. Thus where the obstruction to the flow of urine is of such a nature as to operate directly on both ureters, the result is a complete suppression of the urinary secretion; but where the cause of obstruction is more remote from the kidneys, the bladder, which is a dilatable organ, being interposed between them, the result is the gradual production of a disease of the kidneys, which, if not inflammatory in the beginning, very soon assumes that character, running the ordinary course of chronic inflammation afterwards.

Where the disease of the kidneys has been preceded by inflammation of the mucous membrane of the bladder and ureters, the adhesive alkaline mucus which it contains forms the predominant character of the urine. But in the other class of cases, the urine is voided turbid, with small flakes of lymph floating in it. It exhibits abundant indications of the presence of albumen on being tested with nitric acid, or heat, and it sometimes deposits pus. In all cases, as the disease in the kidneys makes progress, it gives origin to an order of symptoms quite different from those which mark the early stage of the disease of the prostate gland, and which I need only briefly enumerate, as they very nearly correspond to those which I have already described in the concluding part of the last Lecture. The patient complains of an uneasy sensation in the loins, which at last amounts to considerable pain. He feels as if the back required support, and places a cushion behind him for that purpose. Then there is pain extending across the anterior part of the abdomen near the hypogastrium, and sometimes pain, and even chronic inflammation and enlargement, of one of the testicles. By degrees the local disease affects the general system. The patient is observed to be languid and listless; he dislikes exertion, and scarcely pays any attention to things which he would formerly have regarded as objects of the greatest interest. The pulse becomes feeble; the hands and feet are cold; the stomach refuses food; there is an incessant nausea and sickness: one or two rigors probably occur, which are followed by still more marked symptoms of debility, which gradually become aggravated, until they terminate in death.

Besides the more manifest and important consequences of the chronic enlargement of the prostate gland, which I have already described, and which are to be attributed to the connection of the part diseased with the urinary organs, there are others less dangerous, but sufficiently distressing, which arise from the contiguity of the prostate to the rectum. When this gland is only slightly enlarged, it produces no inconvenient pressure on that bowel, but when the enlargement is considerable, there is a constant sense of weight and bearing down,



and the patient has a feeling which leads him to think that he has occasion to evacuate his fæces, although the rectum is empty. I attended an old gentleman who suffered from this kind of tenesmus for some years before he died, and to such an extent as to be rendered quite unfit for living in society. Slighter cases of the kind are not of unfrequent occurrence. The patient usually attributes the sensations which he experiences to internal piles; and, indeed, this last-mentioned disease is often met with in those who labor under enlargement of the prostate, being probably produced by the pressure of the tumor on the larger hæmorrhoidal veins. I have already mentioned a case in which an abscess of the prostate burst into the rectum. In this instance the abscess formed a second time, and again made its way into the bowel; after which it soon healed, and the patient had never any further inconvenience from it.

---

## LECTURE VIII.

### *Treatment of the Chronic Enlargement of the Prostate Gland.*

IF you bear in mind that the chronic enlargement of the prostate gland to which I called your attention in the last lecture, it is not an accidental disease, but one of a series of natural changes which the system undergoes after the middle period of life, you will not be surprised to find that it is but little under the dominion of art. When from any cause the vessels of the prostate are more than usually turgid with blood, the quantity of blood which they contain may be diminished, and thus a reduction of size, to a certain extent, may be effected. It is with this view that we recommend topical blood-letting, the exhibition of gentle purgatives, a moderate diet, and, above all, perfect rest in the horizontal posture. But we are not acquainted with any method of treatment which is capable of restoring the gland to its original condition. I need not occupy your time with a description of all the experiments which I have known to be made with a view to this result, as it would be only to give you a history of their failure. As, however, I have already referred to a case of enlargement of the prostate occurring in early life, in which great advantage seemed to arise from the exhibition of the iodide of potassium, it is right that I should mention that no experience which I have had would lead me to believe that this medicine is useful in cases of the chronic enlargement of that gland in older persons.

Nevertheless, in these cases, much may be done by means of proper surgical treatment. The prostate of a man advanced in life cannot be rendered like that of a young man, any more than his grey hairs can be converted into black: but the train of evils which the enlarged prostate produces by its influence on the urinary organs may

be, in some instances, altogether prevented, and in others very much diminished, so as to remove the patient from a state of extreme, and even immediate danger, to one of comparative security.

In considering the treatment by means of which this object is to be attained, we will suppose, first, that you are called to a patient laboring under a complete retention of urine in the bladder.

The treatment of retention of urine from diseased prostate is one of the most important subjects in surgery. The patient suffers miserably; his life is at stake; he lives or dies according to the skill which you are able to exercise in his favor. The case is altogether different from one of retention of urine from stricture. Bougies are of no service: even if you pass one into the bladder, no urine follows; the parts collapse and close as the bougie is withdraw.

Neither is laudanum useful in these cases. Here is no spasm for laudanum to relieve. If it produces any sensible effect, it is that it makes the patient less sensible of pain: it makes him think himself better than he really is. It deceives him and his friends for a time, but it does nothing towards curing the retention.

When the retention of urine has taken place suddenly, in consequence of a sudden addition to the bulk of the prostate, the patient may derive advantage from losing blood. He may be bled in the arm, or cupped in the loins; and I have known this in a few cases to be of itself sufficient to enable him to make water. But in the very great majority of cases the retention can be relieved only by the use of the catheter.

I rarely use any but a gum catheter. It gives you rather more trouble to learn the use of the gum catheter, and to become dexterous in the management of it, than it does to learn the use of the silver catheter. When, however, you have once become familiar with the gum catheter, you will generally prefer it to the other; and there is always this advantage in it, that, when you have succeeded in introducing it into the bladder, it may, if necessary, be allowed to remain there. A gum catheter may be retained in the urethra and bladder with very little inconvenience to the patient, which is not the case with a silver catheter.

As Sir Everard Home has observed, the gum catheter may be used in two ways; without a wire or stilet, when it is a flexible instrument; or mounted on an iron stilet, in which case it is inflexible. You should be provided with a number of gum catheters, mounted not on small flexible straight wires, like those usually sold by the instrument makers, but on strong iron stilets, having the curve of a silver catheter. The stilets which belong to the larger gum catheters should have flattened iron handles, resembling that of a common sound. Let your gum catheters be kept thus prepared for a considerable time before they are wanted for use. They will then become fixed in the proper curvature. With the stilet such a catheter is as inflexible as if it were made of silver: without it, it is capable of retaining its shape to a certain extent; yet it is flexible.

I always begin with passing such an instrument as this first. If the



gum catheter, without the stilet will enter the bladder, it is so much the better. It gives the patient no pain: it is incapable of lacerating the urethra, or producing hæmorrhage: it may do all that is required; and it can do no harm, even in a rough hand. If you fail in introducing it, the failure will not make it more difficult to pass another instrument afterwards. In difficult cases, indeed, the gum catheter without the stilet will not succeed. You must then use your gum catheter mounted in the way which I have already explained.

You ought not to use a catheter so large as to give pain; but for the most part you will find one which is large enough to fill the urethra, without stretching it, to be more easy of introduction than a smaller one. A very small catheter approaches to a pointed instrument, and the extremity of it is liable to become entangled in the tumor of the prostate. The stilet ought to be considerably curved. The reason of this is obvious. The tumor which projects into the bladder, and which affords the principal obstruction to the catheter, is situated at the posterior part of the inner orifice of the urethra. A catheter which is slightly curved comes directly in contact with this tumor. In a catheter which is much curved, the point is directed forward towards the pubes, and it avoids the obstruction behind. Always bear in mind, in introducing the catheter, that it is to be used with a light hand. It should be held as it were loosely in the fingers. It will then, in great measure, find its own way, in that direction in which there is the least resistance. If you grasp it firmly, it can go only where you direct it, and it is likely to puncture and lacerate the membrane of the urethra, and the substance of the prostate, and to make a false passage, instead of entering the bladder.

I generally find that I introduce the catheter best by keeping the handle of it at first close to the left groin of the patient. I pass it as far as possible in this position; then I bring the handle forwards, nearly at a right angle to the pubes, and not elevating it towards the patient's navel. The next thing is to depress the handle, which is to be done gently and slowly, by placing a single finger on it, and pressing it downwards towards the space between the thighs.

In depressing the handle, you generally find the point of the catheter slide into the bladder. Sometimes, however, this does not happen until you withdraw the stilet; and, in the act of doing this, the introduction of the catheter is completed.

Other artifices are necessary, in difficult cases, to enable the catheter to reach the bladder. It may be useful to bend the point forward as it approaches the prostate, either by means of the finger in the rectum, or by pressure made on the perineum. In many instances, the introduction of the catheter will be best accomplished by taking care, while you depress the handle, to keep the concave surface closely pressed against the arch of the pubes, so that it may turn round it as a centre.

But it is impossible to explain to you in words all the minute circumstances which practice and experience will teach you, and on which your success in this manual operation will very much depend.

In some cases of diseased prostate, the urethra becomes very irritable, and liable to spasm at the membranous part. This is observed especially where several rude attempts to introduce the catheter have been made before you have been called to the patient. Here the gum catheter on an iron stilet is certain to bring on spasm, unless it be handled with the greatest dexterity and gentleness: and sometimes it will induce spasm in spite of all your care; so that you cannot make it pass even to the neck of the bladder. But a gum catheter without a wire, being a softer instrument, is not very likely to produce the same effect; and I have frequently found the following method to be successful:—I have passed the gum catheter as far as it could be made to pass without the stilet: it has probably stopped at the neck of the bladder, that is, at the tumor of the prostate: I have then introduced the stilet into the catheter, without withdrawing the latter from the urethra; and thus having made the catheter, without the stilet, pass through the part which is the seat of the spasm, I have been enabled afterwards, by employing the stilet, to direct the point over the tumor of the prostate into the bladder.

I cannot too strongly impress on your minds the necessity of gentle manipulation in all these operations. To attempt to force the catheter into the bladder is an almost certain method of causing it to penetrate into parts which it ought not to enter, and adds greatly to the difficulty of introducing it into the bladder afterwards. Besides, such rude treatment lays the foundation of much subsequent mischief, in the shape of abscesses in deep-seated parts, from whence the matter collected cannot find a ready exit. Such abscesses are not confined to the substance of the prostate gland, or its immediate neighborhood. I was consulted by a gentleman who had suffered from retention of urine from an enlargement of the prostate some months previously; the catheter having been, as I understood, introduced with considerable difficulty. From that time, whenever a few ounces of urine were collected in the bladder, he had complained of a most severe pain, referred nearly to the situation of the entrance of the left ureter. The patient ultimately died; and on examining the body after death I found a false passage extending from the urethra behind the prostate gland into an abscess between the bladder and rectum, and at the spot to which the pain had been referred.

When the catheter has entered the bladder, and the urine is evacuated, you must pursue one of two courses: either allowing it to remain in the urethra and bladder, secured by a proper bandage, and with a peg in the orifice, so that the patient may relieve himself whenever he has a desire to void his urine; or withdrawing it, and reintroducing it as soon as the bladder becomes again distended. Now, I do not mean to lay it down absolutely as a rule, that you should allow the catheter to remain, but I am certain that it is prudent to do so in the great majority of cases. If you remove it, so abundant is the flow of urine which immediately takes place from the kidneys, that you will find the bladder again loaded, and requiring the re-introduction of the catheter, within five or six, perhaps even within three



or four, hours. It will be necessary to use the catheter again after another short interval; and it will often happen, when there has been no difficulty in the first introduction of it, that there is considerable difficulty afterwards.

You avoid all this by leaving the catheter in the bladder; and there is another advantage in this mode of proceeding. The prostate gland is kept in a state of more complete repose, and in one much more favorable to recovery, so far as recovery can take place, than it would be in, if irritated by repeated introductions of the instrument.

After the catheter has remained in the urethra for some days, you may withdraw it; and if the patient is now able to empty his bladder by his own efforts, it may be laid aside altogether; otherwise, it must be regularly introduced once or twice in a day, or oftener, according to circumstances. Where the enlargement of the prostate and retention of urine have come on suddenly, the patient generally regains the power of emptying the bladder in the course of three or four weeks, and sometimes much sooner; but where the disease has come on gradually, he never regains it completely. In the former case, he may be liable to a recurrence of the retention of urine, at longer or shorter intervals; but in the latter, he is more or less of an invalid ever afterwards.

Before we quit this subject of retention of urine from an enlargement of the prostate, there is, however, another point to be considered. You will *very rarely* fail, by dexterous management, to introduce the catheter; but you *may* fail, nevertheless, in some instances. What is to be done under these circumstances? Are you to puncture the bladder? and if so, in what situation? It will be of no service here to do what some recommend in cases of retention of urine from stricture; namely, to make an opening into the urethra, beneath the pubes. The size of the prostate renders the case unfavorable for the puncture from the perineum, or the rectum. You may puncture the bladder above the pubes, or you may proceed thus:—When all your efforts to introduce the catheter have been unavailing; when you feel the point pressing against the tumor of the prostate, and unable to pass over it; apply some force to the instrument at the same time that you depress the handle. It will generally penetrate through the prostate, enter the bladder by an artificial opening, and relieve the patient; and of course will continue to relieve him, if you allow it to remain in the bladder.

This mode of proceeding has been strongly recommended by some very good surgeons, and I am not aware that it is attended with danger, although it may not be without its disadvantages. There is reason to believe, that in some cases in which this has been done, the natural orifice of the urethra has become so closed that the patient never could void a drop of urine by his own efforts, being compelled to rely wholly on the use of the catheter ever after. Sir Everard Home has published the history of a case of this kind which was attended by Mr. Hunter and himself. You may see the bladder of this patient, with the perforation of the prostate through which the catheter used

to be introduced, preserved in the museum of the College of Surgeons. The inconvenience which I have now described does not, however, exist in every instance. An old gentleman, the only patient indeed in whom I ever purposely perforated the prostate when laboring under a retention of urine, ultimately regained the power of making water, so as to be able to dispense entirely with the use of the catheter.

Let us now suppose a case in which a patient consults you laboring under symptoms that indicate a partial retention of urine in the bladder. He is unable to empty the bladder by his own efforts. You then are to introduce the catheter, and empty it artificially. The remedy seems to be very obvious: yet it had not occurred to surgeons generally, until it was suggested by Sir Everard Home, within the last thirty years; and to him we are indebted for this great improvement in practical surgery. The immediate effect of drawing off the water is to give the patient the greatest comfort. He loses the irritation which tormented him before; he is free from pain; and is no longer harassed by the incessant desire to make water. But the relief is only temporary. In a few hours the bladder is again loaded, and the symptoms return. The catheter is then to be introduced again; and you must continue to introduce it at regular intervals. These intervals will vary in different cases. One patient is quite comfortable if the urine be drawn off twice in the twenty-four hours, while another requires it to be done every six or eight hours. I rarely recommend the catheter to be used oftener than this. If employed six or eight times in the day and night, it is likely to irritate the prostate, and to do harm instead of good. The plan is to be pursued, probably, to the end of the patient's life. It may be distressing to him to be thus dependent on the use of the catheter, but it is the least of two evils. The repeated introduction of it is an inconvenience, but it prevents misery and destruction. Without it, slow inflammation of the mucous membrane of the bladder, extending along the ureters to the kidneys, will supervene; abscess will form in the prostate; and probably stone in the bladder. But where the catheter is used regularly, these evils are at any rate delayed for a considerable time, and in by far the greater number of cases are prevented altogether.

But is the patient to be subject to the daily attendance of a surgeon for the remainder of his life? This cannot be necessary. Let him learn to introduce the catheter for himself. If possible, let him use the gum catheter without the wire or stilet. It is less likely to occasion irritation than a harder instrument, and he can never with this do himself any material injury.

Now, it is this continued use of the catheter, in those cases in which the patient is unable completely to empty the bladder by his own efforts, which constitutes the principal part of the treatment to be employed in ordinary cases of disease of the prostate gland. In some cases nothing more is required; and the patient who is dexterous in the use of the catheter, and who is careful never to neglect the regular introduction of it, passes through the remainder of his life, an in-



valid indeed, but with little or no actual suffering; and dies at last of some other disease, entirely independent of that which exists at the neck of the bladder.

But there are many cases in which this is not in itself sufficient, and in which other treatment is necessary to remove or palliate the distressing and even dangerous symptoms which arise in the progress of the complaint.

When the mucous membrane of the bladder is affected by slow inflammation, the patient complaining of augmented irritation and pain, and the urine depositing ropy, adhesive, alkaline mucus, you are to employ those remedies which I recommended formerly under these circumstances, when speaking of diseases of the bladder; such as small doses of cubebs pepper; the decoction of the *pareiera brava*, combined with tincture of hyoscyamus, and mineral acids; opiate clysters or suppositories; and rest in the horizontal posture. By proper attention, you may generally relieve the symptoms of chronic inflammation of the mucous membrane which occur in consequence of a diseased prostate, when they exist in a moderate degree. When, however, the case has been long neglected, and the inflammation has extended from the bladder to the ureters and kidneys, neither these nor any other remedies will be of real service, and the patient will sink, in defiance of all your skill, under his complicated maladies.

If the patient labors under such symptoms as lead you to believe that there is inflammation of the prostate, which, if it proceeds, may terminate in the formation of abscess, take blood from the perineum by leeches or cupping, administer gentle aperient medicines, and advise the patient to void all but the most moderate bodily exertions. By these means you will often succeed in preventing suppuration from taking place. If abscess, however, be already formed, and has burst in the perineum or into the rectum, nothing is required, or at least nothing can be done, beyond maintaining as much as possible the general health, so that the power of the patient's constitution may be under the most favorable circumstances for repairing the mischief which has taken place. If the abscess has burst into the urethra, or at the neck of the bladder, it is very desirable to avoid, for a time, the frequent introduction of the catheter, the point of which is liable to become entangled in the abscess, producing a fresh attack of inflammation, and perhaps sloughing, of its inner surface, with a train of dangerous constitutional symptoms. Under these circumstances, I generally allow the gum catheter to be constantly retained in the urethra and bladder, until there is reason to believe that the abscess is healed. The catheter used on these occasions should be rather less than the middle size. A catheter, which completely fills the canal of the urethra, may press on the orifice of the abscess so as to interfere with the free discharge of its contents, and thus may increase the evil which it is intended to remove. In some cases, however, after the formation of abscess, the neck of the bladder becomes so tender that the constant retention of the catheter cannot be endured. We have then no alternative; the catheter must be used at stated periods, great

care being taken that its points should not penetrate into the cavity, nor even into the orifice of the abscess.

An abscess which has an external opening is likely to discharge its contents more freely, and therefore heals more readily, than one which has burst into the bladder, or urethra, or rectum. Whenever, therefore, the symptoms lead us to suspect that suppuration is taking place, we should from time to time examine the perineum and scrotum, and not hesitate, where any tumor can be discovered, to make a puncture with a lancet, without waiting for it to present itself at the surface.

In those cases in which there is reason to believe that the diseased prostate is in a state of ulceration, the distressing symptoms which arise are to be combated chiefly by the free use of opium, administered in the form of clysters or suppositories. In some instances, the patient enjoys on the whole more comfort if the catheter be allowed to remain constantly in the urethra and bladder: in other instances it is the reverse, and the catheter must be introduced occasionally, that is, whenever a moderate quantity of urine is collected in the bladder, being withdrawn immediately on the bladder being emptied.

Hæmorrhage from the prostate is to be treated like any other internal hæmorrhage; and it will cease, in ordinary cases, if you take blood from the loins by cupping, administer a saline purgative, and keep the patient on a low diet, and in the horizontal posture. Where the hæmorrhage is unusually great, blood should also be taken from the arm. The object of blood-letting here is to lessen the force of the heart's action; and in some cases it will be right to bleed the patient, even until syncope is induced. Those medicines which operate as styptics when taken internally, and which are useful in cases of hæmorrhage from the lungs, are also useful in cases of hæmorrhage from the prostate. I had a patient with very diseased prostate. A frightful hæmorrhage took place. The usual methods of treatment were adopted, but were of no avail. The skin became pale; the pulse became weak; and the patient was exhausted: yet the bleeding continued. Large quantities of blood were drawn off with the catheter; nevertheless, the bladder continued to become more and more distended with blood, and was felt prominent in the belly as high as the navel. All other remedies having failed, I gave the patient a dose of the nostrum known by the name of Ruspini's styptic, and repeated the dose two or three times in the course of the next twelve hours. In about half an hour after the first dose was taken, the hæmorrhage ceased, and it never recurred.

I have said that in this case the bladder was distended with blood, forming a tumor in the abdomen as high as the navel; and this great evil remained, although the hæmorrhage had ceased, giving the patient all the torment of a severe attack of retention of urine. In order to relieve him, I left a gum catheter in the urethra and bladder, and at intervals injected some tepid water into the bladder with a syringe. Every portion of water dissolved a portion of the blood; and by means of the same syringe I was enabled to draw the blood, which



was thus dissolved, out of the bladder. By performing this operation in so careful a manner as not to produce any fresh hæmorrhage, and repeating it over and over again, in the course of forty-eight hours I succeeded in emptying the bladder completely of the blood which had been accumulated in it. The patient lived for a year and a half afterwards, and there was no reason to believe that any ultimate harm arose from the bleeding.

So far the treatment of the chronic enlargement of the prostate gland is sufficiently simple. It becomes more difficult, and, a greater degree of circumspection is necessary in forming a prognosis in those cases in which the original disease is complicated with a secondary disease of the kidneys.

Here the first thing to be done is to remove the existing cause of the secondary disease, by having recourse to that treatment which will relieve the primary; and if the disease in the kidneys has made but little progress, you will find that it subsides spontaneously, as soon as the accumulation of urine in the bladder is prevented by the regular introduction of the catheter. If, on the other hand, it be far advanced, it is but too probable that it will proceed to an unfavorable termination, notwithstanding all your efforts to prevent it. Still art may do much in certain cases. If there be a quantity of adhesive mucus in the urine, indicating the existence of chronic inflammation of the mucous membrane, you may administer the decoction of the *prariera brava* combined with the mineral acids, and tincture of henbane, or small doses of the cubeb pepper. If the urine be free from this kind of mucous, but opaque, yellow, albuminous, or depositing pus, you may give the patient the infusion of diosma in the manner which I recommended formerly. At the same time, the powers of the patient should be maintained by means of a nutritious diet, with a limited quantity of ale or wine. If there be much pain in the loins, stimulating liniments of mustard poultices may be applied twice daily, or a blister occasionally. Still the use of the catheter is indispensable, as it would be unreasonable to expect that any remedies should act on the disease in the kidneys, while the cause that has produced it continues to operate.

Yet, however necessary it may be in all cases, there are some in which much discretion is required in resorting to the use of the catheter. What I am about to state is not an opinion formed hastily, but a deliberate conclusion, to which I have been led, after having had for many years, no small share or experience in the treatment of these disorders, as well as considerable opportunities of investigating the morbid appearances which they leave behind them in the dead body. If, in a case of chronic enlargement of the prostate, the patient has been allowed to go on for two or three years, or longer, without the use of the catheter, and, in consequence of this neglect, the quantity of residuary urine in the bladder has gradually increased, so that at last one, or two, or more pints are accumulated in it, the kidneys having at the same time become diseased, the introduction of the catheter, according to the rules formerly laid down, so as to empty the

bladder two or three times daily, is likely to be injurious rather than beneficial. The patient is, it is true, relieved of many of his distressing symptoms. He is no longer tormented by a frequent desire to void a small quantity of urine, nor by an involuntary dribbling of urine during the night ; nor does he suffer the uneasy sensation which, in a greater or less degree, always attend an over-distended bladder ; but, in the course of a few days, it is observed that he avoids his usual exertion, that he seems languid, and loses his disposition to take food. Then the other symptoms of disease in the kidney, which were but imperfectly developed before, become distinctly marked, and he gradually sinks, and dies at the end of a month or six weeks from the time of the catheter being first employed.

I shall describe to you more at length, in a future Lecture, what are the consequences of the operation of lithotomy performed on a person who labors under any considerable disease of the kidneys. At first he is greatly relieved, and often seems to recover rapidly from the effects of the operation ; but, in the course of a few days, his bodily powers begin to fail, and death ensues at no distant period ; and this happens even where the stone has been of a small size, extracted in the shortest possible space of time, and with the least possible injury to the parts concerned. The resemblance between the effects produced by the use of the catheter, in the way, and under the circumstances, which I have just endeavored to describe, and those which follow the operation of lithotomy in a patient similarly circumstanced, is too obvious to be overlooked, and I conclude that they are to be referred to a common principle. The system suffers from the shock of the operation, in one case ; and in the other case it suffers in the same manner from the impression made on it by the sudden emptying of the over-distended bladder, and consequent removal of the pressure which is made, through the medium of the dilated ureters, on the glandular structure of the kidneys.

Here, then, arises an important practical question. The patient has no chance of recovery without the use of the catheter. Are we to leave him to his fate ? or are we to empty his bladder at certain intervals, at the risk of hastening the period of his dissolution ? I have no doubt that we may, in many instances at least, obtain the good and avoid the evil, by a slight modification of the treatment. Let the catheter be introduced at first so as to draw off only a portion of the contents of the bladder, and let several days be permitted to elapse before it is completely emptied ; care being taken, at the same time, to uphold the general health by the exhibition of ammonia, quinine, and other tonics, exhibited according to circumstances, and combined with the prudent use of wine or brandy and a plain but nutritious diet.

#### *Scirrhus of the Prostate Gland.*

I have observed that malignant diseases of the prostate are of rare occurrence. I have, however, seen cases in which I could not well



doubt that the prostate was affected by scirrhus, although I had no opportunity of positively ascertaining the fact by dissection.

In February, 1831, a gentleman from Maidstone, fifty years of age, consulted me under the following circumstance :—

He complained of a too frequent indication to void his urine ; so that he was disturbed not less than ten or twelve times in the course of the night. The act of voiding it was attended with some degree of difficulty ; and occasionally he observed that it could not be accomplished in the position in which he then was, and he was under the necessity of altering it. A small quantity of urine sometimes flowed involuntarily after he thought that his bladder was emptied. He suffered a severe and constant pain, extending from the left groin across the lower part of the abdomen, above the pubes, and also down the thigh and leg. The pain above the pubes was aggravated during the effort to make water. He compared the pain in the thigh and leg to that which he suffered when he had sprained his thumb, and said that it prevented his throwing the weight of his body on that limb when he stood erect. There was an enlarged and indurated gland in the groin, to which the pain was referred. The urine was high coloured, but otherwise in a healthy state, free from mucus and albumen. A catheter having been introduced after he made water, it was ascertained that there was no obstruction in the urethra, and no residuary urine was found in the bladder. He had lost flesh, and had the aspect of a person laboring under a malignant disease. He was hot and feverish at night, and the pulse was never less than 100 in a minute. The prostate gland being examined from the rectum, was found not very much enlarged, but of stony hardness.

The symptoms which I have described first showed themselves in the preceding August, and had gradually increased up to the time of my being consulted.

It appeared to me that the circumstances of this case could not well be explained, except on the supposition of the prostate gland being affected with the true scirrhus disease; and Mr. Travers, who was consulted, also came to the same conclusion.

The patient returned to Maidstone, and died shortly afterwards. There was no opportunity of examining the body after death.

Another case fell under my observation, in which, also, I was led to believe that the patient labored under scirrhus of the prostate. I preserved no notes at the time, but I know the following history to be accurate as far as it goes.

A gentleman, about sixty years of age, who had been long in India, consulted me a few years ago, respecting what appeared to be a chronic enlargement of the prostate gland. There was nothing unusual in his symptoms, and I merely recommended to him the regular use of the catheter. From this treatment he derived much benefit, and he persevered in it ever afterwards.

It was not less than five or six years after this period that I was requested to see him again, in consultation with Dr. Latham and Mr. Mawdsley. He now could void no urine without the assistance of the

catheter. There was a constant and most severe pain referred to the neck of the bladder, which was not relieved on the urine being drawn off. The urine deposited a considerable quantity of adhesive mucus, and was of an ammoniacal odor. The prostate gland, examined by the rectum, was found to be much enlarged, and of a stony hardness. From these circumstances we were led to suspect that the prostate had become affected with a true scirrhus disease; and, in confirmation of this opinion, we found the patient complaining of excruciating pains in various parts of the body, sometimes in one part, sometimes in another, which could be compared to nothing except the pains under which persons afflicted with carcinoma occasionally labor. Altogether, I may say, that I have never seen a human being whose sufferings were more intense; and they were scarcely mitigated by the exhibition of very large doses of opium. I continued to visit him occasionally, in consultation, for nearly a year, at the end of which time he suddenly lost the use of the muscles of his lower limbs, and died in a fortnight afterwards. Permission was not obtained to examine the body; but it is worthy of notice, that a lady, whose case is related in the eighth chapter of the last edition of my work on Diseases of the Joints, and who had long labored under carcinoma of the breast, died after a similar attack of paralysis of the lower limbs, and that in her it was ascertained by dissection, that the cause of the paralysis was a conversion of the bones of the spine into the scirrhus structure.

---

## LECTURE IX.

### *On Urinary Calculi.*

THE urine in its natural state is composed of a number of ingredients, which are maintained in solution as long as they preserve the temperature of the body. Sometimes, however, it happens that one or more of these ingredients is deposited in a solid form, although the urine has undergone no alteration in its temperature, and even while it remains in the bladder, or in some other of the urinary passages. These deposits may be in the form of small particles, or sand; or in larger masses. We call these latter calculi. Whether there be merely sand, or whether there be actual calculi, the nature of the disease is essentially the same; and it is to these calculous disorders that I call your attention in this and the following Lectures. The subject is one of the highest interest, on account of the number and variety of the phenomena which it embraces; on account of the pain, distress and deep anxiety which the patient suffers; and on account of the great relief which the art of surgery is capable of affording in the majority of these cases.



*Of Sand in the Urine.*

The urine contains a large quantity of a peculiar acid, first accurately described by Scheele, who gave it the name of uric acid, but to which the name of lithic acid is more commonly applied by the chemists of this country. It was formerly supposed that the pure acid was held in solution by the urine. Dr. Prout, however, has shown that the pure acid is almost insoluble, and that, under ordinary circumstances, it exists only in the form of lithate of ammonia, which is a very soluble salt. It is this, and not the uncombined acid, which causes healthy urine to redden litmus paper. In very cold weather the urine, as it cools, deposits the lithate of ammonia, blended with some other animal matter. It is the lithate of ammonia, also, which forms the principal part of the soft or uncrystallized sediment deposited in the vessel by the urine of persons who labour under dyspepsia, and some other bodily ailments.

Now, if you add to healthy urine some kind of acid, for which ammonia has a stronger affinity than it has for the lithic acid, the juice of a lemon for instance, the lithate of ammonia is no longer precipitated; but in its place you find a number of small crystals, resembling particles of Cayenne pepper, sometimes of a brown, but more frequently of a dark-red color, at the bottom of the vessel. These are composed of the pure lithic acid. The lemon juice unites with the ammonia, and the lithic acid, being nearly insoluble, is precipitated. This, which happens out of the body, may happen in the body also. The presence of another acid in the urine causes the lithic acid, even in the bladder, to be precipitated in the form of a red sand. Dr. Prout says that it is usually the lactic acid which produces this effect. However that may be, we find that those who are liable to the formation of acid in the stomach are especially liable to the deposition of the red sand. If the digestion be weak, whether it be that the food itself becomes aced, or that acid is secreted in too large quantity by the stomach, the red sand shows itself. If the food be indigestible, or if it be taken in too large quantity, the same effect may be produced even in the most healthy person. The free use of fermented liquors, and especially of those which contain acid already, or sugar, which may become acid in the stomach, such as punch and champagne, leads to the same result. Persons who lead a sedentary life, and who never take exercise so as to produce perspiration, are also especially liable to the formation of red sand. Dr. Philip has made some interesting observations relating to this last point, which are of much practical importance. You will find them recorded in a paper published by Dr. Philip, in one of the volumes of the Medical Transactions of the College of Physicians. It seems as if, during perspiration, something was carried off from the blood in the cutaneous vessels, which would otherwise cause the urine to be loaded with acid. Sir Gilbert Blane long ago observed that a disposition to calculous disorders is frequent-

ly combined with eruptions on the skin (psoriasis), and Dr. Philip's observations will explain the reason of this association.

When the urine contains a superabundant acid, which precipitates the lithic acid sand, it usually is bright and transparent to the eye, and of a copper color, resembling in appearance Madeira wine. In general the patient is troubled more or less with dyspeptic symptoms, and frequently he is liable to gout. Many circumstances demonstrate a close connection between this last disease and the formation of red sand in the urine. The same peculiar constitution, the same luxurious diet, the same inactive life, which makes you subject to the one, makes you also subject to the other. The red sand is composed of crystals of lithic acid in its pure state; while the chalk stones, which are formed in the bursæ and cellular membrane of gouty patients, are composed of the same acid, in combination with soda, and the red or yellow deposit from the urine of gouty persons consists chiefly of the lithate of ammonia.

In the (so called) better classes of society, you will find the deposition of red sand to exist chiefly in adult persons, but in the lower classes you find it chiefly among children. These circumstances are easily explained. Adult persons in affluent circumstances, for the most part, lead a more luxurious and indolent life than their children; while among those of lower condition the diet of the children is frequently unwholesome, and comparatively little attention is paid to the various derangements of the digestive organs to which they are liable.

In many instances the red sand is voided without any particular symptoms to indicate its formation, and the patient discovers the disease only by seeing it in the urine; but at other times he complains of uneasy sensations in the loins, of pain in the groins, and in the course of the urethra; and sometimes a small quantity of blood is discharged from the urethra, in consequence of its being abraded in some one part by the sharp hard angles of the crystals. Where the urethra is irritable and liable to spasmodic affections, the contact of the red sand induces spasm in it, occasioning a diminution of the stream, and even difficulty of voiding the urine. In such cases you in vain endeavour to cure the stricture merely by the use of bougies; but if you employ at the same time such remedies as tend to prevent the formation of the red sand, you cure the stricture easily.

It is of great consequence that you should stop the formation of red sand, both because it is in itself a considerable evil, and because, if neglected, it may lead to the formation of a larger concretion in the bladder. You may generally accomplish this object by conveying alkaline remedies into the stomach, such as potass, soda, lime-water, ammonia, magnesia. Sometimes one, sometimes another, may be preferable, according to circumstances; and sometimes it may be advisable to give them in combination with each other. If the lithic acid be deposited in small quantity, and the bowels are too much relaxed, (which, however, rarely happens in these cases,) lime-water may be useful. In persons of weak bodily powers, who may be supposed to require cordial and stimulating remedies, you may exhibit ammonia.



Dr. Prout recommends the carbonate of potass, in preference to the carbonate of soda, for the following reason:—that the soda, under certain circumstances, will enter into combination with the lithic acid, forming an insoluble salt, as bad as the lithic acid itself; whereas the lithate of potass is perfectly soluble; and if this combination takes place, it will pass off dissolved in the urine. Magnesia, as recommended by Professor Brande, has much to recommend it. Being in itself insoluble, it cannot enter the circulation except it has first become combined with acid in the stomach or intestine; and hence it does not pass out of the system so soon as the alkalies.

I have mentioned the *carbonates* of potass, soda, and ammonia, as these agree better with the stomach, and therefore are more proper to be employed than the pure alkalies. The carbonic acid does not interfere with their medicinal effects. There is a remarkable difference in the effects produced on these disorders by the salts, which contain a mineral, and those which contain a vegetable acid. The sulphates, muriates, nitrates, are of no avail; but the tartrate of potass, the tartarised soda, the common saline draught, composed of nitric acid and potass, all produce the same effect as the pure alkalies, or as the alkalies combined with carbonic acid. This remarkable circumstance was first noticed by Sir Gilbert Blane. Sir Gilbert has also recommended a very efficient method of exhibiting the carbonate of potass in these cases, by giving it in a saline draught with an excess of alkali.

I have said that different doses of the alkaline remedies will be required in different instances. Indeed a good deal of care is generally necessary to adjust the dose to the peculiar circumstances of the individual case. If you give too little of the alkali, the result is not obtained, and the lithic acid is still deposited, although in smaller quantity. If you give too much, you not only prevent the formation of the red sand, but you render the urine alkaline, and a white sand (the triple phosphate of ammonia and magnesia) is deposited in its place. Other ill consequences follow the too liberal exhibition of alkalies. They alter the quality of the blood. After some time the patient is less liable to pterchiæ; he perspires too easily; becomes low-spirited, and less capable than when in health of physical exertion. Magnesia does not produce these effects, at any rate not to the same extent, as no more of it can enter the circulation than what is rendered soluble by its combination with acid in the stomach. Too large doses of magnesia, however, are mischievous in another way, by causing the formation of magnesian calculi in the intestines. These are composed of magnesia mechanically blended with the *fæces* and intestinal mucus. They are not uncommon in these times, when so many individuals are in the habit of taking magnesia in a careless and profuse manner. I have in several instances known a person to suffer a good deal of distress from such a calculus being lodged in the rectum. But cases have occurred, in which the accumulation of magnesia in the intestine has taken place to a very great extent. Mr. Wilson examined the body of a patient in whom, if I recollect rightly, many pounds of magnesia

were found collected in the colon above a contracted part of the rectum.

In the exhibition of alkaline remedies, then, you must make each case the subject of a distinct experiment; and that the experiment may be more properly conducted, you must, if possible, make the patient enter into your views, that he may assist your practice by his own observations. You should be provided with paper, colored blue by an infusion of litmus; and also with the same paper, slightly reddened by immersion in a very weak acid. Healthy urine ought to turn the blue litmus paper a little red; and you should avoid giving alkaline remedies in such a dose as to destroy this property altogether; still less ought you to render the urine alkaline. If the urine turns the red paper blue, the patient is in danger of suffering from a deposition of the phosphates, and the alkalies must be given in smaller quantity.

It is to be further observed, that the time when the urine is most acid, and when the alkalies are most required, is after the principal meal, that is, after dinner. The alkalies are not indeed to be given immediately after dinner, for then they are likely to interfere with digestion; but three or four hours afterwards. In some cases it is better for the patient to defer taking his medicine until he wakes accidentally in the middle of the night. In many instances, a single dose daily, and that at bedtime, is all that is required; while in others the magnesia or alkali should be exhibited in the middle of the day also.

It appears to me that it has been the custom of late years to give these remedies in larger quantities than is really necessary. It rarely happens that half a scruple of magnesia, or a scruple of the bicarbonate of potass, is not sufficient to neutralise the superabundant acid in the stomach after dinner; and, where a second dose is wanted, half this quantity may be given in the middle of the day. The following combination agrees very well with the stomach, and produces a very immediate effect on the urine:—

℞ *Magnesia*, gr. vj.

*Potassæ bicarbonatis*, gr. xij.

*Potassæ tartratis*, gr. xv.—*Misce. Fiat pulvis quoque vespere semendus e cyatko parvo aquæ.*

But it may truly be observed that this is not striking at the root of the disorder. Alkalies prevent the formation of red sand while they are being taken, but they do not prevent it being formed again as soon as they are left off. The patient cannot well take them forever; and something further, therefore, is required. When he suffers from costiveness, purgatives must be exhibited; and even in those cases in which the bowels are not particularly torpid, purgatives are useful. The mercurial purgatives are, on the whole, to be preferred. A blue pill may be administered every night, with a draught of infusion of senna and tartrate of potass every third or fourth morning; or a calomel pill may be given once or twice in a week, at bedtime, and



the senna draught on the following morning. When the disease is connected with gout, the patient may take the colchicum with great advantage. In the first instance, fifteen drops of the *vinum colchici* may be administered twice or three times daily; afterwards, a draught of infusion of senna, with a saline purgative, and forty or forty-five drops of the *vinum colchici* may be given occasionally in the morning, or from one to two grains of the acetous extract of colchicum may be given as a pill for eight or ten successive nights.

But more, after all, is to be effected by attention to diet and mode of living than by medicine. Is the patient a great eater, pampering his appetite by a variety of dishes, and thus exciting himself to swallow more food than his stomach can readily digest?—let him make his dinner on a single dish, and eat that in moderate quantity. Let him also incline to a diet of vegetable rather than one of animal food; avoiding, however, undressed vegetables, and especially those which are acid or acescent; as sallad, oranges, and apples. Does he commit excesses in drinking?—let him leave off fermented liquors altogether, or take them only in small quantity; and in particular let him avoid such fermented liquors as, from the sugar which remains unfermented in them, are liable to become acid in the stomach, or which are acid already. The French white wines are injurious in these cases, especially champagne; but none of them are worse than our own English liquor called punch.

If your patient has been in the habit of dining late in the evening, going to bed soon after a hearty meal, he should alter his habits in this respect; dining sufficiently early to allow of his food being digested before he retires to rest. If he has led a sedentary life, he should cease to do so; walking or riding daily, so as to induce perspiration. A person who takes a good deal of exercise may take liberties as to diet, which he could not otherwise take with impunity. For example:—A gentleman of my acquaintance was accustomed to dine daily in convivial society, eating and drinking heartily, and not stinting himself in the use of champagne. But he was of active habits. He rose early in the morning, walked for an hour or two before breakfast, and came home to breakfast perspiring profusely. If by chance, in his morning's walk, he met any one of his friends, his remark was, that he was doing this to distil off the champagne which he had drunk yesterday. By and by some circumstances occurred which altered his mode of life in this respect; and not long afterwards he consulted me concerning two symptoms which gave him some trouble and anxiety: the one, a quantity of red sand in the urine; and the other, a scaly eruption (*psoriasis*) of the skin. He had continued to eat and drink as usual, but he had ceased to rise early, and to take his long walk, which brought him home perspiring to breakfast; and this alteration in his habits was soon followed by the appearances of the red sand and the eruption. A gentleman of my acquaintance, who has for many years indulged himself in very liberal portions of wine daily, and who has lived luxuriously otherwise, nevertheless retaining the most perfect health and cheerfulness, attributes his exemption from

the usual ill consequences of such a mode of life to the circumstance of his being accustomed to perspire profusely during the night.

A copious perspiration may be produced in other ways, as well as by means of exercise. The most certain and effectual method is the use of the sulphur-fumigating, or hot-air bath. The hot-air bath is certainly a great advantage to those persons who, having led an inactive life, are subject to dyspepsia, and those twinges in the limbs, especially in the feet, which sooner or later are followed by a regular attack of gout; and I believe that it may also be employed beneficially in cases in which the patient suffers from a too large proportion of lithic acid in the urine. It is worthy of observation, that the perspiration produced by the hot-air bath is highly acid, reddening the blue litmus paper nearly as much as it is reddened by acid urine. Such, indeed, is the character of the secretion generally, and thus the beneficial effects of a free perspiration are easily explained. As the introduction of any acid into the stomach may promote the development of the lithic acid in the system, so it may be supposed that the abstraction of any acid from the skin may produce the same result. The fact, however, may be explained in another manner. Dr. Prout says that, for the most part, the precipitation of the lithic acid sand is caused by a superabundance of the lactic acid in the urine. But the lactic is the predominant acid in the perspiration. Probably each of these explanations is correct as applied to different orders of cases.

The red or lithic acid sand is not the only sand deposited by the urine. In some instances, the urine deposits distinct white particles, which are minute crystals of a triple salt composed of the phosphate of ammonia and magnesia. Here the urine is not acid, but of an alkaline quality: it turns the reddened litmus paper blue, and, if very alkaline, it turns the yellow tumeric paper brown; or it may be slightly acid when first voided, becoming alkaline as it cools, and having a pellicle on its surface, which shows the prismatic colors, and is composed of the salt just mentioned. According to Dr. Prout, the formation of the white sand takes place in the following manner:—The urine, under ordinary circumstances, contains the phosphate of magnesia, which is held in solution, being a highly soluble salt. But in some cases of disease, the urea of the urine becomes decomposed in the kidneys, and ammonia is evolved, which combines with the phosphate of magnesia, so as to make a triple salt. But the triple salt is insoluble, and, therefore, it is precipitated in the form of a white sand. Dr. Prout observes, also, that the same state of system which leads to the decomposition of urea and the evolution of ammonia leads also to a more abundant formation of the phosphate of magnesia; and hence arises the immense deposition of white sand, which occurs in some cases. Indeed, this is sometimes so great, that the quantity of the phosphate of magnesia, which healthy urine contains, will by no means account for it. I performed the operation of lithotomy on a boy, whose urine, after the operation, deposited such a quantity of the triple phosphate, that his perineum, the inside of his thighs, and the bed clothes, had the appearance of being dusted over with a white pow-



der; and if this was wiped off, the appearance was renewed in the course of a few hours.

The existence of the white sand in the urine is no new discovery; it having been described by writers, under various appellations, even before Dr. Wollaston ascertained its chemical composition. It was not, however, until the investigation was taken up by Dr. Prout, that any just notions were formed as to the peculiar circumstances under which the salt is generated.

The state of the system which leads to the production of alkaline urine, and of white sand, is very different from that which is attended with a too acrid condition of the urine, and the formation of red sand. The latter occurs in individuals who are over-fed, or over-stimulated, and whose vital powers are not expended by exercise; where there is what Dr. Cullen would have called a sthenic diathesis. But the alkaline urine indicates an asthenic state of the system; it is the result of debility. In a person who is exhausted by too severe mental or bodily exertions, or who has long been worn by mental anxiety, the urine becomes alkaline. A gentleman, who was at that time attending these Lectures, called on me, to consult me concerning his general health. After a careful inquiry into the circumstances of his case, I was unable to discover any marks of local disease. It was not one function in particular, but all his functions were deranged. He had been in the habit of sitting up to write out his notes until two in the morning; he had arisen from his bed at six; he had worked all day, both with his hands and with his head; in short, he was suffering from excessive labor of both body and mind. I said to him, "Your case is not one which medicine alone will cure; you must study less, and sleep more. Your system is in a state which will lead you to having alkaline urine, if you have it not already." He went into the adjoining room to make water, and immediately on its being voided, I tested the urine, and found it to be alkaline, as I had anticipated. I mention this case, that the important fact which it illustrates may be well impressed on your minds; but cases corresponding to it are not uncommon.

In many instances, a course of mercury renders the urine alkaline. In some individuals, even a single dose of calomel will produce the same effect. Mercury is what is commonly called a *lowering* medicine, and this seems to explain the principle on which it operates. In a person who is already weak, the further degree of exhaustion, which is the consequence of the exhibition of an active purgative, will be sufficient to make the urine alkaline. The too abundant exhibition of alkaline remedies will, as indeed might be expected, lead to the same result. Injuries of the spine, affecting the spinal chord, will also be followed by the secretion of alkaline urine. I first observed this fact as long ago as the year 1807, and have taught it in my surgical Lectures from the time that I began to deliver them in the year 1808. Since then the observation has been confirmed, not only by my own experience, but by that of many other individuals. It is remarkable that this effect is equally produced whatever is the part of

the spine that is injured; whether it be the loins, or the back, or the neck; whether the bladder be, or be not, paralytic. It continues even after the patient has recovered of all his other urgent symptoms. I was consulted by a gentleman who had met with a severe injury of the spine more than a year before. Immediately after the accident had occurred, his limbs had become paralytic, but he began to regain the use of them in the course of a few weeks; and when he applied to me he could walk and ride like other persons, but his urine was still alkaline. The same thing occurs where there is disease of the spinal chord independent of mechanical injury. I have lately attended a gentleman who labored (as the *post-mortem* examination proved) under an affection of the lower half of the chord. It had lost its natural structure, and was in that state to which Rostan has applied the name of *ramollisement*. There was some reason to believe that in this case the disease had been induced by excessive venery—that it was a true *tabes dorsalis*. One symptom was a half paralytic state of the muscles of the lower limbs, so that the patient could scarcely walk even with the assistance of crutches;\* another was a highly alkaline condition of the urine. In this case, in the commencement of the paraplegia, the urine was unusually acid, and it was only as the paraplegic symptoms advanced that it became alkaline. This confirms a remark which Dr. Prout has made, that alkaline urine is frequently preceded by a too abundant formation of lithic acid. In females who labor under what may be regarded as aggravated hysterical affections, the urine is frequently alkaline, and deposits the triple phosphate in abundance. The same persons are also liable to have the red or lithic acid sand in the urine; and not unfrequently the two kinds of sand alternate with each other. It is astonishing what a quantity, sometimes of lithic acid, and sometimes of the triple phosphate, passes off with the urine in some of these cases.

Those persons who habitually secrete alkaline urine are generally pale and sallow; incapable of much bodily and mental exertion; complaining of lassitude and weariness; and when this state of things has existed for some time, their bowels become irregular, being sometimes too much confined, at other times too much relaxed; and they exhibit other marks of debility. Such is the description of the symptoms connected with the secretion of alkaline urine given by Dr. Prout; and your future experience will enable you to bear testimony as to the general correctness of this statement. There are, however, cases to which it does not apply; and I have at this time under my care a gentleman whose urine is alkaline, and has been so for a considerable time, although his general health is good, and he has no other ailment, with the exception of a costive state of the bowels. The urine, instead of the transparent coppery appearance which it possesses, when

\*Some further observations illustrative of the influence of the spinal chord over the secretion of urine, and of the effects produced on the kidneys and bladder, will be found in my memoir on "Injuries of the Spinal Chord," published in the 20th volume of the *Medico-Chirurgical Transactions*.



it is too acid, is voided slightly opaque; of a pale color, like whey; and being secreted in too large quantity and much diluted, it is of a low specific gravity. The odor is unnatural and disagreeable: sometimes ammoniacal. When allowed to stand, even for a short time, the triple phosphate is deposited in the form of a white sand, at the same time that a pellicle is formed on its surface, which shows the prismatic colors, and which Mr. Brande has ascertained to be composed of the triple phosphate also. If allowed to stand for a long time, the urine becomes putrid, and always smells of ammonia.

Besides the triple phosphate of ammonia and magnesia, another salt, into the composition of which the phosphoric acid enters, is frequently to be detected in the urine; namely, the phosphate of lime. A small quantity of this salt seems to be occasionally generated by a diseased kidney; but by far the greater proportion of it is derived from another source.

Dr. Austin, physician to St. Bartholomew's Hospital, in the year 1791, published a Treatise on Stone in the Urinary Bladder, in which he states, that "the main result of his inquiries has been, that the stone is formed generally in very small part, and often in no degree whatever, from the urine as secreted in the kidneys, but chiefly from mucus produced from the sides of the different cavities through which the urine passes." The late Mr. Chevalier, in the second volume of the Medico-Chirurgical Transactions, published some observations which were intended to confirm Dr. Austin's hypothesis. These notions, however, attracted but little attention, even when first promulgated; nor is this to be at all wondered at, when we consider how much they are at variance with a multitude of well-known facts. Nevertheless, they are not absolutely without foundation. Dr. Austin was in an error, inasmuch as he mistook the exception to the general rule, for the rule itself; but no further. It is true that calculous matter, in by far the greatest number of instances, is a deposit from the urine, but under certain circumstances it is generated by the mucous membrane which lines the bladder, and extends from thence along the ureters to the pelves and infundibula of the kidneys.

I have described in a former Lecture the phenomena which belong to chronic inflammation of these mucous membranes. One of its effects is the secretion of a tenacious ropy mucus in a most abundant quantity. This mucus is highly alkaline, containing the carbonate of soda, which is a soluble salt; containing also the phosphate of lime, which is insoluble. The latter is frequently seen presenting the appearance of white streaks in the mucus. In some cases it is produced in still larger quantity, and it comes away in irregularly formed masses resembling mortar.

According to my experience, such is the most frequent origin of the deposits of phosphate of lime, which take place in the urine. Occasionally, however, they are met with where no signs of actual inflammation exist, and where there is little, or none, of the adhesive mucus. The phosphate of lime then assumes the form of whitish impalpable powder, which falls, like powdered starch, to the bottom of

the vessel. Dr. Prout describes the urine in the majority of these cases as being of a pale color, and of a low specific gravity, though it is sometimes quite otherwise. But even here Dr. Prout is led to believe that the phosphate of lime is furnished by the mucous membranes of the bladder, ureters, and kidneys, and not by the structure which secretes the urine.\*

In either of these forms of the disease the phosphate of lime may be generated where there is none of the triple phosphate in the urine, and you will frequently find the urine to be acid when it is first voided even though it deposits an alkaline mucus. If you wait some time longer putrefaction begins, ammonia is evolved, and the whole is rendered alkaline. The triple phosphate of ammonia and magnesia, and the phosphate of lime, have different origins, and either of them may exist in the urine independent of each other. But it continually happens that you find these two varieties of the phosphates co-existent in the urine; and this combination is probably produced in one of the following ways:--

1. The primary disease may be a secretion of alkaline urine in the kidneys, and consequent production of the triple phosphate. The alkaline urine is an irritating application to the membranous surfaces with which it comes in contact. If it continues for a certain time, it induces a chronic inflammation of the mucous membrane of the kidneys and ureters, extending to that of the bladder, and the formation of adhesive mucus, containing the phosphate of lime:

2. In other cases, the chronic inflammation of the mucous membrane of the bladder is the primary disease. This cannot exist long without affecting the constitution. It excites, not inflammatory fever, but a low febrile disturbance of the system, attended with much general debility. Such a state of system is very liable to occasion a secretion of alkaline urine in the kidneys:

3. In other cases, the secretion of phosphate of lime by the mucous membranes may be a simultaneous effect of the same unhealthy condition of the constitution, which causes the formation of the triple phosphate of ammonia and magnesia in the urine.

And, in one or other of these ways, it happens that the formation of the triple phosphate, and that of the phosphate of lime, are associated with each other; sometimes one, and sometimes the other, being the original malady.

The treatment of patients in whom the urine deposits the triple phosphate, or white sand, is to be conducted on principles very different from those by which you are regulated where you are required to prevent the deposition of the lithic acid.

The formation of the triple phosphate indicates great general debility. Whatever tends to lower the patient aggravates the malady. Purgatives are to be exhibited with the greatest caution, and mercu-

\* I have seen one case in which the phosphate of lime generated in large quantity in a diseased kidney reached the bladder in the form of a thick white paste, the ureter being found in the post-mortem examination distended with a mass of substance similar to that found in the bladder.



rial purgatives especially are to be carefully avoided. All alkaline remedies, such as soda, potass, magnesia, limewater, are to be avoided also. I have frequently known them to be exhibited by those who did not distinguish the different varieties of calculous disorders from each other, and who had a vague notion of alkalis being good for the gravel; and I have seen them productive of the very worst effects in many instances. I know it has been said that these remedies may be useful where the digestion is bad, even though the urine is alkaline; and I have myself seen every now and then a case of this description, in which *small* doses of soda were exhibited with advantage; but I am sure that such cases are to be regarded, not as constituting the foundation of a general rule, but as exceptions to it. Be assured that the rule is, that alkalis are to be avoided. On the same principle on which you avoid alkalis, you are to exhibit acids. This mode of treatment was first suggested by Dr. Wollaston. Mr. Brande recommended the use of vegetable acids in preference to the mineral. At any rate, these are very fit to be employed where they do not disagree with the stomach so as to interfere with digestion. The patient may drink lemonade, or eat oranges or lemons, in such quantity as he finds necessary. If the vegetable acids, however, as frequently happens, do not agree with the stomach, the mineral acids may be given instead. The dose of the acid must depend on circumstances, and you must regulate it by making frequent examinations of the urine with the reddened litmus and yellow tumeric paper. From five to ten minims of muriatic acid, given three times daily, will generally be sufficient; but in extreme cases you may give as much as thirty or forty minims, or even more, of the strong nitric acid, in the course of the day, sufficiently diluted with syrup and water. The effect of these large doses of nitric acid in correcting the alkaline quality of the urine is most remarkable. I shall mention to you what happened in the first case in which I prescribed them as an experiment. A young man consulted me, laboring under great irritability of the bladder, the consequence of a highly alkaline state of his urine. The urine was voided turbid, of no offensive ammonical odor, depositing a large quantity of the phosphates so as to encrust the chamber-pot, and turning the tumeric paper of a brown color. He was at the same time looking ill, languid, and debilitated. These symptoms were the manifest consequence of over-exertion of body and mind. I prescribed forty-five minims of the strong nitric acid, with an ounce of syrup of orange peel and some tincture of henbane, to be taken daily in a pint of water. The change produced in the urine was immediate. It assumed a better appearance in the course of a few hours; and when I saw the patient again at the end of four days, it had become actually acid, the general health being at the same time manifestly improved.

In these cases all kinds of tonic medicine are likely to be useful, such as bark, sulphate of quinine, bitter infusions, sulphate of iron, the tincture of the muriate of iron, &c. The diet should be plain, but rather generous, and, at the same time, such as is easy of diges-

tion; consisting of a due mixture of animal and vegetable food. Fermented liquors may be taken in moderate quantity; and, for the most part, the acid wines, as Hock, Moselle, or Chably, will be preferable to others. Dr. Prout has pointed out the good effects of opium, henbane, and other narcotics. If opium does not interfere with the digestive functions, you may give it in doses from half a grain to a grain twice or three times daily. In general, in these cases, opium agrees with the patient, and the tongue remains moist, and the digestion unimpaired, under its use. In addition to these remedies, the patient is to avoid all severe exertion, whether mental or physical; and he should be kept as free as possible from all causes of anxiety, his mind being agreeably occupied by some light employments which do not require any considerable exercise of attention. Courses of mercury, and even a single dose of mercury, are likely to be injurious, as is the case also with antimony, and other diaphoretics, and with drastic purgatives.

When the phosphate of lime is deposited by the urine in the form of an impalpable powder, with little or no increase of the mucous secretion, I usually prescribe mineral acids, although, according to my experience, they are much less influential in these cases than in those in which the urine contains the triple phosphate. They may be combined with other tonics, or with such remedies as may seem best calculated, according to the peculiar circumstances of the individual case, to improve the general health.

Much more may be done in those cases in which the phosphate of lime is deposited in consequence of a ropy mucous secretion from the mucous membrane of the bladder. Here you are, in the first instance, to endeavor to remove the cause on which the secretion depends; namely, the chronic inflammation of the membrane. I must refer you here to the observations which I made in one of my former Lectures, briefly recapitulating, however, what I then said on the subject. Bleeding not only does not tend to diminish the inflammation, but is actually injurious. The first thing to be done, is to discover the cause of the inflammation, and to remove it if possible. It may depend on stricture of the urethra, and may be relieved immediately on the stricture being dilated with a bougie. It may depend on a partial retention of urine in the bladder, in consequence of an enlargement of the prostate gland. The bladder must then be emptied artificially by the introduction of a gum catheter once, or twice, or three times daily. It is seldom advisable in these cases to keep the catheter constantly retained in the bladder, for then the catheter becomes in itself a source of irritation, keeping up the inflammation of the bladder, and adding to the cause on which the deposition of the phosphate of lime depends. Perfect rest in the horizontal posture, opiate clysters, or suppositories, opium, or the extract of henbane, or lettuce, given by the mouth, will be useful also. The exhibition of the decoction of the root of the *pareira brava* is, in many instances, productive of excellent effects. It has a remarkable influence over the secretion of the ropy alkaline mucus. Injections into the bladder of



warm water, and even of a weak solution of nitric acid, are sometimes useful; but of the cases in which these last remedies are to be recommended, I shall speak to you more particularly in a future Lecture.

Where these two diseases, namely, the secretion of the triple phosphate of ammonia and magnesia by the kidneys, and of the phosphate of lime by the bladder, are co-existent, (and this, as I have already explained, is a very common occurrence,) you must combine the two modes of practice, which I have just described, with each other. They are quite compatible; and, in fact, there are very few of the remedies which are useful in the one case, which are not also useful in the other.

---

Besides those which have been already described, you will occasionally meet with a deposit from the urine, consisting of the lithic acid sand and the triple phosphate, blended together in various proportions. The quantity of these mixed deposits is sometimes enormous. A lady who labored under some aggravated hysterical disorders used to void as much as would fill a table-spoon, or even more in twenty-four hours. In other cases you will find a patient voiding sometimes the pure lithic acid, and at other times the pure triple phosphate. The treatment of such cases is very perplexing. If one disease be already predominant, it may be attended to, to the exclusion of the other. If neither be predominant, you can proceed on no better principle than that of allowing the urinary disease to take its course, while you use your endeavour to improve the general health, which in such cases is always much deranged.

Dr. Prout has described an order of cases, in which the urine deposits the lithate of soda in masses of sufficient size to block up the urethra, and occasion considerable difficulty in voiding the urine. The lithate of soda is the salt which forms gouty secretions; and the cases alluded to were supposed to have occurred in persons of gouty constitution. For further information on this subject, as well as for a more ample history of the pathology and treatment of urinary deposits generally, I must refer you to Dr. Prout's elaborate and profound "Treatise on Stomach and Urinary Diseases."

---

## LECTURE X.

### *Renal Calculi.*

I SHALL now call your attention to those larger concretions which

are formed, and usually retained, during a longer or shorter period of time, in the kidneys, and which are therefore denominated renal calculi. Some of these are of frequent, and others are of rare, occurrence.

1. The most common variety is that which is composed of pure lithic acid. These are generally of a compact texture, laminated internally, and of a light brown color. In other respects they present very different characters in different cases. One person will void one every now and then of an oval shape, varying from the size of a pea to that of a horse-bean, tolerably smooth on the surface. Another will void several at a time, perfectly spherical, having the appearance of hemp seeds. In other cases the figure of the calculus is irregular and the surface rough.

Dr. Prout is led to believe that the lithic acid forming a calculus of this kind is secreted by one of the mammillary processes of the kidney in a semi-fluid state; that it afterwards becomes hard, the semi-fluid mass contracting in bulk as the hardening process proceeds. In Dr. William Hunter's Museum, which was formerly in Windmill Street, but which is now in Glasgow, there are several interesting preparations illustrative of this point in pathology. In some of them the mammillary processes having been longitudinally divided, the *tubuli uriniferi* are seen blocked up with calculous matter; and in one of them the development of the calculus being farther advanced, it is seen partly imbedded in the apex of the mammillary process and partly projecting into the *infundibulum*. These preparations go far towards confirming Dr. Prout's doctrine, as we cannot well suppose the calculous matter in the *tubuli* to be in an actual solid state.

Lithic-acid calculi may be generated in the kidney in persons of any age, but they are much more common in those who have passed the middle period of life than in younger persons. We meet with them most frequently in those who have led luxurious and indolent lives, and who previously have been subject to deposits of lithate of ammonia or of lithic acid sand in the urine. It is this class of individuals that are especially liable to gout, and there is an evident connection between these two diseases. A patient may have been in the habit of voiding lithic-acid calculi; he becomes affected with the gout, and the formation of the calculi ceases. In a few cases the two diseases go on together. But I do not remember an instance of a gouty patient who was troubled with the gouty concretions, commonly called chalk-stones, being also troubled with lithic-acid calculi. These gouty concretions are composed of lithic acid combined with soda; and if the lithic acid be secreted into the joints it cannot be secreted from the kidneys. Some persons void an immense number of this kind of lithic-acid calculi: I am almost afraid to say how many I have known to be passed by one individual—probably several hundreds, of all varieties of size.

2. The renal calculi next in order of frequency are those composed of the oxalate of lime. These are usually of a dark color, of an irregular shape, with a number of small protuberances on the surface,



presenting somewhat of the appearance of a mulberry, and hence denominated *mulberry calculi*.

Calculi of this description are much more rare than those composed of the lithic acid. It is not merely that the disposition to form them exists in fewer individuals, but that where it does exist they are not generated in the same numbers as the lithic-acid calculi. A patient may void one of these calculi and never void another, or he may void a second after the lapse of many years. In one instance, however, on examining a body after death, I discovered as many as five or six calculi of oxalate of lime in one kidney. In this case there was extensive suppuration and complete disorganization of the glandular structure of the kidney, and this local disease was the immediate cause of death.

The researches of Dr. Prout have led him to believe that the oxalate of lime calculus is not generated in a perfectly healthy kidney, and that two conditions are necessary to its formation: the first, that the oxalic acid should exist in the system, and be secreted with the urine; the second, that lime, in some shape or another, (that is, the phosphate of carbonate,) shall be furnished by the mucous membrane of the *infundibulum*. According to my experience, disorganization of the kidney occurs in a much greater proportion of cases of calculus composed of lithic acid. I formerly believed that this arose from the oxalate of lime calculus being especially irritating to the parts with which it lay in contact; but since I have been made acquainted with Dr. Prout's observations on the subject, I cannot but suspect that I mistook the effect for the cause, and that the existence of the diseased kidney gives rise to the calculus, rather than the calculus to the diseased kidney.\*

3. The triple phosphate of ammonia and magnesia is sometimes deposited in the kidney; but I have known only one instance of a renal calculus being entirely composed of this substance, and I conclude, therefore, that this is a very rare occurrence. But it very frequently happens, where a calculus has been lodged in the kidney for a considerable time, that the triple phosphate constitute its external layer while the nucleus is either lithic acid or oxalate of lime. How this happens will be explained hereafter, when we consider the subject of calculi of the bladder.

4. Calculi, composed of phosphate of lime, are occasionally formed in a diseased kidney, probably not from the urine, but from the other secretions of the affected organ. In the museum of St. George's Hospital there are two kidneys, taken from the same subject, completely filled with calculi of this description, the glandular structure having almost wholly disappeared. A gentleman voided a small renal calculus composed of the oxalate of lime. Soon afterwards, it was evident that he had disease of the kidney, and in the course of another year he voided another calculus, composed of the phos-

\* The oxalate of lime, however, not in all cases formed in the manner just stated. Mr. Cross, in his treatise on Calculous Disorders, describes a case in which the crystals of this salt were detected in the *tubuli uriniferi*.

phate of lime. He ultimately died of extensive disease of the kidney.

We are indebted to Dr. Prout for the explanation of the origin of the renal calculus of phosphate of lime. All that I have seen of these cases satisfies me that his views are correct; but it will be sufficient for me to refer to a very interesting case recorded by Dr. Prout himself. He examined the body of a gentleman who died of extensive disease of the kidneys. He found in each of them large deposits of calculous matter; some contained in natural cavities, to which the *urine had access*; others in cysts, which were the products of disease, and to which the *urine had not access*. The former of these deposits consisted of the phosphate and carbonate of lime, with an admixture of the triple phosphate of ammonia and magnesia, while the latter consisted of the phosphate and carbonate of lime only.

It is worthy of notice, that the phosphate of lime constitutes the earthy matter deposited in consequence of disease in other structures, as in the arteries, the lymphatic glands, the valves of the heart, the lungs, the dura mater, and sometimes even in the uterus.

5. The formation of a renal calculus, composed of the cystic oxide, is a very rare occurrence. I have nothing to say respecting it from my own experience. For what little is known on the subject I refer you to Dr. Prout's treatise.

The late Mr. Earle published a paper, in the *Medico-Chirurgical Transactions*, in which he endeavors to show that the formation of renal calculi may frequently be traced to a local injury affecting the loins and kidney. I would advise you to read the paper itself, which contains much interesting information. The only observations which I have to offer on the subject of it at present are those which follow:—

First. Where a disposition to form calculi exists, a mechanical injury may (I doubt not) determine the disease to one kidney rather than to the other; but this disposition is so manifestly connected with a peculiar state of the system, and peculiar habits of life (especially in cases of lithic-acid calculi), that we seem to be scarcely justified in regarding it as arising altogether from the agency of a local cause.

Secondly. It is not improbable that, in some cases in which a mechanical injury has preceded the formation of calculi in the kidney; the first effect of it has been to occasion disorganisation of the glandular structure, and abscess; and that the calculi generated under these circumstances have been composed of the phosphate of lime, derived, not from the natural secretion of the urine, but from the morbid secretions of the diseased part; and corresponding, as I have just explained, to the concretions of the same kind which are met with in other diseased textures.

Dr. Prout describes the formation of a lithic-acid calculus in the kidney to be, in many instances, preceded by a disordered state of the general health, bearing a close resemblance to what occurs in gout, and attended with a scanty secretion of high-colored urine. That the lithic acid, while in the circulation, should act as a *materies morbi*, and that the symptoms to which it gives rise should be relieved as



soon as the poison which produces them is expelled from the system, is probable enough. It must be owned, however, that both this and the calculus of oxalate of lime are frequently generated in the kidney without any premonitory symptoms of sufficient consequence to attract the patient's notice. Not unfrequently, indeed, the patient does not suspect that he labors under any kind of disease, until he finds a small calculus expelled with the urine. At other times, however, the presence of a calculus in the kidney is indicated by a pain in the corresponding loin; extending from thence downwards towards the groin and testicle, accompanied with a sense of weight in the loins, and occasionally with tenderness. After exercise the urine is tinged with blood; and the functions of the stomach are liable to be deranged, with sickness and vomiting. But all these symptoms are subject to great variety. Sometimes the pain is trifling, at other times, very severe; or there may be much pain one day, and little or no pain at all, on another. There is, for the most part, more pain where the calculus is associated with a diseased kidney, than where the kidney is otherwise healthy; this being in conformity with a general law of the animal economy, that in cases of disease, the sensibility of the diseased organ is exalted above the natural standard. It is to be presumed also, that the degree of pain may be influenced by the size, and shape, and situation of the calculus; and that much may also depend on the general health at the time. In some instances the urine is only slightly tinged with blood, depositing it in the form of coffee grounds on particular occasions; while in others, the hæmorrhage is considerable, distinct clots of blood being expelled with it from the bladder. It is a rare occurrence, that the urine should never exhibit any appearance of blood; but even this happens sometimes. Lastly, the gastric symptoms, which I have mentioned, seldom show themselves in the early stage of the calculous formation, although they are not uncommon afterwards, as I shall explain presently.

I have said that a calculus may pass down the urethra, and be at last expelled from the bladder without the patient being conscious that anything unusual is going on. This, however, can happen only where the calculus is of a very small size, or where the ureter has been dilated by the passage of a larger calculus previously. If a calculus be large enough to distend and stretch the ureter in its passage to the bladder, it occasions intense suffering. At first, the pain is referred to the region of the kidney and the groin. It is often very severe; and in that case attended with sickness and vomiting, prostration of strength, cold extremities, a feeble pulse, and a pallid countenance: in short, the patient is in what is commonly called a state of collapse. These symptoms are followed by pain referred to the inside of the thighs and the testicle; and frequently the testicle is drawn upwards to the groin by a spasmodic contraction of the cremaster muscle. The urine is usually secreted in small quantity, of a high color, and the bladder being impatient of its contents, the patient is making water at short intervals, with pain referred to the neck of the bladder. No relief from these symptoms is experienced until the calculus has

escaped from the lower orifice of the ureter, and entered the bladder; but as soon as this has happened, the patient's tortures (for they truly deserve that appellation) are at an end. The time occupied by the passage of the calculus along the ureter varies in different cases, according to the dimensions and figure of the calculus and the impulse which it receives from the current of urine behind it. Sometimes the calculus may reach the bladder almost immediately; at other times it may be lodged in the ureter for many hours, or even for several days. Where the descent of it is thus protracted, the parts to which the pain is sympathetically referred become tender to the touch, and the testicle not unfrequently is actually inflamed and swollen, the inflammation of it continuing for some time after the cause which produced it has ceased to operate.

I shall probably find no better opportunity than this of mentioning a class of cases which you will occasionally meet with among the affluent classes of society, the symptoms of which bear no small resemblance to those which I have just described, although they have a very different origin; and the diagnosis of which is of no small importance in practice. The persons liable to be thus affected are those who lead indolent lives, indulging themselves, at the same time, in all the luxuries of the table. There is pain in the loins, often very severe, extending downwards to the groins; the urine is scanty and high-colored, depositing, as it cools, an abundant red or yellow sediment (lithate of ammonia). It is voided in small quantities, and a scalding sensation is referred to the neck of the bladder as it flows. So far the symptoms a good deal resemble those produced by the passage of a calculus down the ureter; but the absence of pain in the testicle, of sickness and faintness, and the presence of no small degree of symptomatic fever, enable you to distinguish the two orders of cases from each other. The effect produced by the remedies employed will assist you in your diagnosis. The symptoms which have been just described are of a gouty origin, and yield almost immediately to a free exhibition of colchicum; which, however, it is generally more prudent not to administer until after the bowels have been emptied, by the exhibition of some grains of calomel, followed by a draught of infusion of senna with the sulphate of magnesia, or some other saline aperient.

In the majority of cases, a calculus of the kidney finds its way into the bladder soon after its first formation; but in other cases it remains for a considerable time in the kidney, being at last dislodged by some accidental circumstance. For example:—A gentleman somewhat advanced in years, who had observed occasionally that his urine was tinged with blood, was overturned in a carriage in which he was riding with two ladies. It was a large heavy vehicle, which came to the ground with great force, causing those who were in it to be severely jolted. When, after the delay which this necessarily occasioned, he had reached home, he found his bladder much distended, and he experienced a violent desire to void his urine. On his making the attempt, however, no urine flowed, there being evidently a mechanical



impediment. He strained and strained again, and at last the impediment gave way. A renal calculus, which seemed to have the form of one of the *infundibula* of the kidney, was projected with no small degree of force into the chamber-pot, and then the urine flowed in a full stream. In other cases, a stone, which has been long impacted in the kidney, becomes dislodged in consequence of some changes which take place spontaneously in the affected organ, independently of any mechanical injury.

A calculus retained in the kidney produces various degrees of inconvenience to the patient. Sometimes, indeed, it may be said to cause no inconvenience at all, so that calculi are found in the kidney after death, the existence of which had never been suspected during the patient's lifetime. In other cases, the patient complains of pain in the loins, and the urine is occasionally tinged with blood, especially after any jolting exercise, such as riding on horseback. Hæmorrhage from the kidney may be the consequence of various renal affections; of diseases which are, and of diseases which are not, malignant; and it seems sometimes to occur, where there is no actual disease, from a relaxed state of the blood-vessels. Still, in the great majority of cases hæmorrhage from the kidney is connected with a renal calculus; and where there is the exact combination of symptoms which have been just enumerated it is scarcely ever otherwise.

A calculus which is impacted in the kidney goes on increasing in size in consequence of fresh depositions of calculous matter on its surface. Sometimes it grows so large that the escape of it by the ureter is impossible. It occupies at last the whole of the pelvis of the kidney, extending also into the *infundibula*, assuming the shape of the parts in which it is large, and bearing some resemblance in its general appearance to a piece of madreporé. In these cases the external layers are generally composed of the triple phosphate of ammonia and magnesia, while the nucleus is either lithic acid or oxalate of lime, more frequently the former.

It may happen that the pelvis of the kidney is at last so completely occupied by the calculus, that the flow of the urine into the ureter is considerably impeded. The result is similar to what occurs in some other cases of obstruction of the ureter. The urine is accumulated in the infundibula, and these become dilated to a large size, forming membranous cysts; while the glandular structure of the organ is expanded, and in a great measure absorbed, from the pressure which is thus exercised upon it. In some cases you find at last the kidney converted into a large membranous bag, on the surface of which scarcely a vestige of the glandular structure is perceptible, while the interior of it is composed of a number of cells communicating with each other, and all containing urine. In other cases you find the whole kidney wasted, the only remnant of it being a membranous substance adhering to an irregularly-formed calculus. Of course, under these circumstances, no secretion of urine can have taken place from the deceased kidney; but the other kidney supplies its place,

and, like a muscle which is called upon to perform double its usual duty, it becomes increased in size in proportion.

Thus you find the kidney in one instance distended into a large bag, and in another wasted and reduced to the smallest dimensions. If you will take the trouble to consider what must happen to a kidney before it can become thus wasted, you will, I doubt not, agree with me in the opinion that these two different conditions belong to the same series of changes. The urine is collected in the pelvis and infundibula; the glandular structure becomes absorbed; and the secretion of urine ceases. Then the urine previously accumulated is absorbed; and the secretion of urine ceases. Then the urine previously accumulated is absorbed in its turn, and the membranous cyst collapses and contracts, until at last it assumes the form of a mere capsule, in which the calculus remains imbedded. An enlarged kidney forms a tumor, which can be distinctly felt in the abdomen of a thin person. There is reason to believe that tumors having this origin occasionally disappear, and what I have just mentioned may serve to explain how this happens.

A calculus lodged in the kidney not unfrequently induces ulceration and suppuration of that organ. It may be, under these circumstances, that the pus escapes with the urine, and passes into the bladder; and this may happen with little or no constitutional disturbance, the symptoms being local, or of such a nature, as to draw the attention of the surgeon to the bladder rather than the kidney. A lady consulted me concerning what was supposed to be an affection of the bladder. She had frequent desire to void the urine; she voided it, of course, in very small quantity at each time; she complained of a cutting pain referred to the neck of the bladder, and the urine deposited what appeared at first to be a muco-purulent secretion, but which afterwards had all the characters of true pus, like that from an abscess. Things had gone on thus for two or three years, when the patient was attacked by other symptoms, such as indicate the passage of a calculus along the ureter. A large renal calculus (of oxalate of lime) came away, and the original symptoms were relieved. They were not, however, entirely removed, as the urine continued to deposit a very small quantity of pus afterwards. I have alluded to this case, as well as to some others, illustrative of the same fact, recorded by Morgagni, in one of the Lectures on diseases of the bladder.

But much greater mischief than that which I have just described sometimes arises from a calculus which has been long impacted in the kidney. The kidney is of a dark color from excessive vascularity; enlarged in size; softened in its texture; and at last abscesses are formed in its substance. Sometimes the abscesses burst from time to time into the ureter, their contents being then expelled with the urine, but not without causing considerable distress to the patient, both as they enter the bladder and as they pass out of it. At other times, and more frequently, they never burst at all, but are found deeply imbedded in the glandular structure of the kidney, when the body is examined after death. In a few instances an abscess connected with calculi of the kidney makes its way backwards, presenting itself,



and bursting in the loins. Some of you will remember a case of this kind which occurred in this hospital not long since. A woman died laboring under an abscess in one loin. On examining the body after death, the abscess was traced to the kidney of the same side, manifestly having had its origin in a large collection of irregularly-shaped calculi. In the Memoirs of the French Academy of Surgery, you will find a paper, in which the author describes two cases of renal abscesses which had burst in the loins, in each of which he succeeded in extracting some calculi through the orifice of the abscess. In one of them, after the removal of the calculi, the abscess healed, and the cure was complete. In the other, a fistula remained ever afterwards; in all probability in consequence of some calculi being still lodged in the kidney, at the bottom of the abscess. Some of the old surgeons have spoken of an operation for the extraction of calculi from the kidneys. The proposal is absurd and dangerous, if made with a reference to ordinary cases of renal calculi, where no abscess exists. But nephrotomy (as it has been termed) is very practicable where nature, by the formation of an abscess, has pointed out the exact situation of the calculi, so that they may be felt by means of a probe.

The condition of the kidneys in the cases which I have just described is very similar to that of which I gave some account in the fifth Lecture, and it is marked by a similar train of symptoms. The symptoms vary in degree according to the extent of the local mischief, and the susceptibility of the constitution. Sometimes many years elapse before they assume any formidable character; and I have already given you the history of a case in which the patient had suffered from calculi impacted in the kidney during a period of at least ten years, and then died of another quite independent disease.

---

The treatment of renal calculi next demands our attention; but what I have to say on the subject may be comprised in a few words.

You will frequently be consulted by persons who are voiding a great number of lithic-acid calculi in succession. Those already formed cannot be dissolved. The best thing that can happen is that they should pass along the canal of the ureter into the bladder, and then out of the bladder by the urethra. But you may do much towards preventing new calculi being generated. The remedies to be employed are similar to those which I have already mentioned as applicable to cases in which the urine deposits the lithic-acid sand. Purgatives and alkalies may be administered, and alterative doses of colchicum where there is a disposition to gout. Attention to diet and mode of life are even of more importance than medicine. But it is needless for me so say more on the subject. I refer you to the observations which I made in the last Lecture.

As to the oxalate of lime, or mulberry calculus, we can do little, probably nothing, in the way of prevention. Fortunately this defect

in our art is of less importance, as the formation of this kind of calculus is much less likely to recur than that of the lithic acid calculus.

The existence of the phosphate of lime calculus in the kidney always indicates disease of that organ; probably an abscess in it. Such cases are little under the control of remedies. However, we cannot be wrong in exhibiting the mineral acids, and otherwise adopting the same treatment as where the triple phosphate or phosphate of lime is deposited by the urine in the bladder.

The passage of a renal calculus from the kidney to the bladder is a natural process, over which we have but little dominion. Where the pain is unusually intense, opium may be administered with advantage, but it must be given in large quantity. The patient may also use the warm bath, remaining in it an hour, or even longer. These remedies, however, only tend to the diminution of suffering. Probably drinking plentifully of diluting liquors may be useful, by causing such a rapid flow of urine as will assist in the propulsion of the calculus along the ureter. I have sometimes thought that the patient has derived benefit from the exhibition of an active purgative; for example, a dose of senna, with sulphate of magnesia and tincture of jalap. Dr. Prout recommends the application of ice to the loin, as affording some relief from the intense pain which the calculus in the ureter sometimes produces.

If there are symptoms which lead you to suspect that a stone is lodged in the kidney, it is of course desirable that it should, if possible, be made to pass into the ureter before it has attained such a size as to be incapable of being conveyed along that canal into the bladder. Horse exercise, especially hard trotting in such a case, generally produces bloody urine. This shows that the calculus is made to undergo some change of position, and whatever produces this effect is, of course, favorable to its escape from the kidney. It is reasonable to suppose, that medicines which occasion a more abundant flow of urine combined with diluting drinks, may also be useful under these circumstances. Where a calculus retained in the kidney produces considerable pain in the loins and neighboring parts, the patient will sometimes derive benefit from local blood-letting, by cupping, or by leeches. At other times, from the application of the belladonna plaster. You may also employ setons and issues in the loins. According to my experience, however, the last-mentioned remedies are seldom very useful, except in those cases in which disease in the kidneys, and especially abscess of the kidney, has taken place as a consequence of the lodgment of the calculus. That they are sometimes eminently useful, under these last-mentioned circumstances, I cannot doubt. I have at this moment a patient under my care, who occasionally voids small calculi from the kidney, laboring, at the same time, under pain in the region of the kidney, with a purulent deposit from the urine; and who has derived marked benefit from a large issue made with caustic, in the loin to which the pain is referred.

Those extreme cases, in which abscess of the kidney has no means of discharging its contents, and, in consequence, produces symptoms



of general depression of the system, with a languor of body, and listlessness of mind, and a belief in the dominion of our art. We must support the patient with tonics, and by making as little demand upon his strength; but, for the most part, we strive in vain against his malady, he sooner or later falls a victim to his malady.

Hitherto I have spoken of calculi as being either lodged in the ureter, or as passing from thence to the bladder. But a calculus may be of such a size as to be stopped in its passage to the bladder, and retained in the ureter. One might suppose, that, under these circumstances, the ureter would become more and more dilated, and, at last, burst, as the urethra bursts behind a stricture. I cannot say that this never happens; and indeed Morgagni quotes a case from another writer, in which there is reason to believe that such an event actually occurred. However, this is not the constant order of events, as the following case will prove:—I attended it many years ago with Mr. Merriman of Kensington; and Mr. Merriman, jun. has lately sent me some notes respecting it. A gentleman, sixty-four years of age, who had been subject to the formation of renal calculi, which had afterwards come away by the urethra, was seized with one of his usual attacks, indicating that a calculus had escaped from the kidney. Instead, however, of terminating in the usual manner, the pain continued unaltered, and he ceased to void his urine. On the supposition that there might be urine in the bladder, the catheter was introduced several times, but no urine flowed. The patient became comatose, and died in a fit of convulsions, eleven or twelve days after the commencement of the attack. On examining the body after death, no urine was found in the bladder. In one kidney there were several calculi: there were none in the other. In the ureter belonging to the latter, and in the upper part of that canal, there was a calculus, as it were, impacted, of about the size of a horse-bean. It appeared, therefore, that the circumstance of one ureter being completely obstructed by a calculus had caused a suppression of the secretion of urine in both kidneys.

A case still more remarkable occurred under the observation of my friend Mr. Travers. A patient died, having each ureter, where it arises from the pelvis of the kidney, completely obstructed by a calculus. The consequence of this double obstruction had been the same with that of the single obstruction in the case last mentioned—namely, an entire suppression of the secretion of urine.

---

A renal calculus, which is small enough to make its way down the ureter into the bladder, is, in the great majority of cases, also small enough to enter the inner orifice of the urethra, being then expelled by the action of the bladder and the pressure of the urine behind. In some instances it meets with an obstruction to its passage along the urethra. The most usual seat of such obstruction is immediately behind the glans, where, in some individuals, there is a natural narrowness of

the urethra. When lodged in this situation it may usually be removed with the assistance of a small forceps, or, if necessary, the narrow part may be dilated by means of a straight bistoury. In some cases of stricture of the urethra a small calculus has been found impacted behind the stricture, causing a retention of urine. In other cases, a calculus, having arrived at the membranous part of the urethra, has been prevented passing further, although there was no stricture, perhaps from the position of it being somewhat changed from what it was when it first escaped from the bladder. Under those circumstances the safest mode of proceeding will be to make an incision into the urethra, by which the calculus may be extracted. I had a case under my care in which two calculi had been lodged in the membranous part of the urethra for two or three years, the urine flowing over them. At last they produced a complete retention of urine, and this not being relieved, the urethra gave way behind the obstruction; and when the patient was admitted into the hospital the perineum and scrotum were completely infiltrated with urine, and gangrenous to a great extent. I made an incision in the perineum, and removed two calculi, one of them as large as a walnut. Unfortunately, the patient had too long delayed to apply for assistance; destruction of the soft parts had taken place to a great extent, and the case terminated unfavourably.

---

## LECTURE XI.

### *History and Symptoms of Calculi of the Bladder.*

ANY solid body which is retained in the bladder for a certain time is liable to have calculous matter deposited on it. Thus a calculus is generated, which increases in size more or less rapidly according to the composition of the urine.

The most common origin of calculus of the bladder is a calculus which has been formed in the kidney which has descended by the ureter, and which is either too large to be voided by the urethra, or which is prevented entering the urethra by the projection of an enlarged prostate gland.

In some instances the nucleus is formed by a foreign body, which has been accidentally introduced into the bladder. The late Mr. Wilson removed a stone from the bladder of a female, and, on sawing it through, discovered a common hazel-nut in its centre. Mr. Wilson gave a portion of the stone, with the corresponding portion of the nucleus, to the late Mr. Heaviside, at the sale of whose museum I purchased it, with the rest of his collection of calculi; and thus you have the opportunity of seeing this singular specimen. A poor man, a gardener in the country, labored under a stricture of the urethra.



Occasionally he suffered from a retention of urine. Being an ingenious fellow, he discovered that he could relieve himself on these emergencies by introducing a flower-stalk through the urethra, into the bladder, using it as a bougie. In an evil hour it happened that the extremity of the flower-stalk was broken off, and lodged in the bladder. The consequence was, that it became encrusted with calculous matter, forming the nucleus of a stone. Some time afterwards, he was admitted into our hospital. Sir Everard Home performed on him the operation of lithotomy. He extracted a considerable oblong calculus, which lay partly in the urethra and partly in the bladder; and, on examining it, the flower-stalk was discovered in its centre.—I removed a calculus from a patient in this hospital which had been formed round a portion of an elastic gum catheter that had been broken off in the bladder. A thoughtless young man introduced a piece of wax into his urethra, and continued to pass it up into the bladder. Ten years afterwards I performed on him the operation of lithotomy, and removed a calculus which is preserved in the museum of this hospital, having the piece of wax for a nucleus. I assisted Mr. Keate in an operation in which he removed a cylindrical piece of sealing-wax, several inches long, from the bladder. This was done soon after the sealing-wax had been introduced. If the operation had been deferred for some time, of course the sealing-wax would have become encrusted with calculous matter.

In one of the preparations in our museum you may see several calculi of a peculiar oblong figure, and of various sizes; the largest about three quarters of an inch in length, and one third of an inch in breadth; but the greater number of them very much shorter and proportionally narrower; each of which has a small fine hair running longitudinally through its centre. I extracted these calculi from the bladder of a female, and they are composed chiefly of the phosphate of lime; which circumstance, as I shall explain hereafter, indicates disease of the mucous membrane. It is difficult to say how it happened that these hairs existed in the bladder; whether they were common hairs, introduced accidentally, or whether they were some of those hairs which are found occasionally in encysted tumors, and in other diseased structures. I suspect them to be of the latter origin. I attended a gentleman who laboured under stone in the bladder, and also under a disease in the kidneys, of which last disease he died; and in whose urine I every now and then detected small hairs, which I had reason to believe had come from the bladder. Unfortunately, there was no *post-mortem* examination, either in this case or in that of the patient from whom these calculi were taken; but it is well known that it is not very uncommon for hairs to grow from the inner surface of an encysted tumor.

Calculi of the bladder differ very much in their appearance and other sensible properties; they differ very much also in their chemical composition. Of late years they have been made the subject of repeated and minute analysis. These investigations, so important to

human nature, and so interesting to the members of our profession, were begun by the late Dr. Wollaston. He was followed by several other chemists; but those who, after him, have contributed most to the advancement of our knowledge of the subject, are Mr. Brande, Dr. Marcet, Dr. Prout, Dr. Henry, and Dr. Yellowly. I shall present you with a brief summary of the observations which these distinguished chemists have offered to the world as the result of their researches.

The substances which enter into the composition of calculi of the bladder are the following:—

1. Lithic acid. These calculi are generally of an oval form, and slightly flattened; of a brownish-red color, approaching to that of mahogany; rather smooth on the surface, but not polished, except occasionally from friction, when there are two or more calculi in the same bladder. If broken, the lithic acid calculi split into concentric laminae.

2. Oxalate of lime. Calculi of this kind are also distinguished by the appellation of *mulberry*. These are of a dark-brown color, approaching to black; rough and tuberculated on the surface, very hard, and imperfectly laminated.

3. The triple phosphate of ammonia and magnesia. This salt forms a fragile calculus, and when broken it does not, like the lithic-acid calculus, split into concentric laminae. The surface of it is uneven, covered with minute crystals.

4. Phosphate of lime. Calculi composed of this substance, un-mixed with other calculus matter, are rarely found in the bladder; and when they are, there is reason to suspect, from Dr. Prout's observations, that they have their origin in the secretions of the bladder itself, and not in the urine. These calculi are of a pale-brown color, and of a laminated structure.

5. Although it is rarely that we find a bladder-calculus composed altogether of phosphate of lime, we frequently find this salt existing in combination with the triple phosphate of ammonia and magnesia. This mixed calculus is of a white color; friable; not unlike a mass of chalk in appearance; not in general laminated. It melts into a vitreous substance when exposed to heat in the flame of a blowpipe; and hence it has received the name of the fusible calculus. Neither of the two salts, of which it is composed, (that is, neither the triple phosphate, nor the phosphate of lime,) melt in this manner when exposed to heat singly, although they are so easily fused when in combination with each other.

6. Lithate of ammonia. This variety of calculus is of a clay color; sometimes it is smooth, and at other times tuberculated on its surface: it is composed of concentric layers. Dr. Prout regards it as being almost peculiar to children.

7. Lithate of soda. This is a rare calculus, of white color, like the chalk-stones of gout, probably formed where the patient, having a lithic-acid diathesis, takes large quantities of soda. I was first informed of the existence of this kind of calculus by Dr. Prout. In our



collection of calculi you will see a fine specimen of it, with a deposit of pure lithic acid on its surface: probably there is a nucleus of pure lithic acid also.

8. Cystic oxide. This is a very rare kind of calculus: it is of a white color; and, when broken, it is found (to use Dr. Prout's own words) not to be laminated, but appearing as one mass, confusedly crystalized throughout its substance.

9. Calculi are sometimes composed of carbonate of lime, but these are of very rare occurrence indeed: the carbonate of lime, however, is frequently blended in small quantity with other ingredients.

10. Dr. Marcet has also described a variety of calculus under the name of xanthic oxide; and another under that of the fibrinous calculus.

11. The fibrinous calculus appears to be composed of fibrine of the blood. I have never met with but one example of it. This was of an oval shape, about the size of a horse-bean, yellow, semi-transparent, not very unlike amber in appearance, but less hard. When dried, it shrunk to a small size, and became, as it were, shrivelled. I found it in the bladder after death, where no disease of the urinary organs had been suspected during life, but where the kidneys were found to have been diseased when the body was examined after death. There can be little doubt that the kidneys had secreted albumen with the urine; and if we consider how near fibrine and albumen are to each other in their chemical composition, we cannot but suspect the fibrinous calculus to be a deposition from albuminous urine. Unfortunately, in this instance, the chemical properties of the urine had not been examined.

In some cases we find a calculus composed throughout of one of the substances, which have been described, nearly pure; but at other times we find these substances variously combined with each other. The best mode of examining a calculus is to have it sawn through the centre. We then find, that, in some of the compound calculi, the different substances are disposed in layers, the lithic acid distinct from the oxalate of lime; the oxalate of lime distinct from the triple phosphate, and so on; while in others they are intimately blended together.

It is only when they are divided in the manner which I have mentioned that we can learn the true history of the formation of calculi. As Mr. Brande long ago observed, the centre or nucleus is generally either lithic acid or oxalate of lime. In many cases, the additions to the calculus are of the same chemical composition with the nucleus; in other cases, we find the lithic acid deposited on the outside of the oxalate of lime; and more rarely, the oxalate of lime is deposited on the surface of the lithic acid. The deposite of acid, or oxalate of lime, may take place in the bladder, where there is no evident disturbance of the general health. If the general health becomes affected, and the bodily powers of the patient are impaired, either from the irritation of the stone in the bladder, or from any other cause, the urine becomes alkaline, and in consequence, the subsequent additions to the

calculi are formed of the triple phosphate of ammonia and magnesia. When the calculus has existed for some time in the bladder, it frequently happens, and indeed it always happens sooner or later, that the mucous membrane becomes inflamed; and an adhesive, tenacious mucus is secreted, which contains phosphate of lime; and this, being blended with the triple phosphate, constitutes the fusible calculus. Calculi formed in the ducts of the prostate gland, as I shall explain hereafter, are composed of phosphate of lime, pure, or nearly so. But whatever may be the condition of the bladder, it is a very rare occurrence to find a simple phosphate of lime calculus in it. In cases of chronic inflammation of the bladder, the phosphate of lime is deposited by the mucus in small masses, but these nuclei being exposed to the contact of the urine, and the health becoming impaired, as always is the case under these circumstances, the triple phosphate is added to the phosphate of lime, so as to constitute the fusible calculus.

For these latter observations I am indebted to Dr. Prout. He has also furnished us with a knowledge of the following most important and interesting facts in the history of calculous formations. There are but few cases in which the phosphates form the nucleus of a calculus; but being once deposited, they continue to be so, and are not followed by other depositions. The phosphates may succeed the lithic acid, or the oxalate of lime; but neither of these ever succeed the phosphates. If the external surface of a calculus is composed either of the lithic acid, or of the oxalate of lime, you may be certain that there are no phosphates in the interior; whereas, if there are the phosphates on the outside, the general rule, to which there are but few exceptions, is, that some other substance lies underneath. When a vesical calculus is sawn into two equal parts, the nucleus is seen in the centre, the calculous matter being deposited equally, or at least symmetrically, on every side. There are, however, exceptions to this rule, and occasionally we see the nucleus near one surface of the calculus, at a considerable distance from the centre. Mr. Cross has explained how this happens. The patient being confined to the recumbent posture, the calculus does not change its place in the bladder, and the fresh deposits take place only on the exposed surface.\*

Calculous disorders prevail differently in different classes of society, among individuals of different ages, and in different climates and districts.

Among the lower classes, children are much more liable to calculi than adult persons. You know how large proportion of hospital patients admitted for lithotomy are children. On the other hand, in private practice, that is, among the upper classes of society, very few of our patients are children, and the great majority are persons above fifty years of age. Nor are these things of difficult explanation. In most instances, the original calculus is composed of lithic acid, that is, there is a lithic acid nucleus; and in a former Lecture I pointed

\* Cross on Urinary Calculi, p. 13.



out some circumstances which are likely to make the children of the lower classes, and those who are advanced in life among the higher classes, especially liable to this kind of deposit.

In all classes, persons of a middle age are less frequently affected by stone in the bladder than those who are younger or older.

Patients with enlarged prostate gland are particularly liable to suffer from calculi of the bladder. The tumor of the enlarged prostate usually prevents the bladder being emptied without the aid of the catheter. The consequence is, that if a small calculus from the kidney finds its way into the bladder, it cannot escape in the usual manner by the urethra; and that it lies and grows in the bladder. For the same reason, lithic-acid sand, particles of phosphate of lime, or any thing else which can act as a nucleus, becomes, under these circumstances, the foundation of a stone in the bladder. The bladder is like a chamber-pot that is never washed out, and the component parts of the urine are very liable to be deposited in it, whenever there is any kind of nucleus to which they can adhere. Sometimes a diseased prostate gland causes the formation of calculi in the following manner:—The mucous membrane of the bladder becomes inflamed, as a secondary disease. The mucus secreted by it deposits the phosphate of lime in small mortar-like masses, and each of these becomes the nucleus of a calculus. In these cases, if you examine the body after death, you find probably a great number of calculi of irregular forms, of a white color, rough on the surface; none of them being of a large size.

But these irregularly-shaped calculi are capable of being united with each other, so as to form a single calculus of large dimensions, and of a regular figure. There is a fine specimen of this rare species of calculus in our museum. In the centre there is a congeries of small masses of calculous matter, with interstices between them, which appeared as if they had been originally cemented by mucus. On the outside of these is a shell or crust, formed of the mixed phosphates, regularly disposed in concentric layers. The history of the patient, from whom this calculus was taken, is highly instructive. He consulted me several years ago concerning an enlargement of his prostate gland, which prevented his emptying the bladder by his own efforts. At that time there was no stone, nor any disposition to form one. I instructed him in the use of the catheter, which he introduced two or three times daily, for three or four years, during the whole of which time he suffered comparatively little from his complaint. I always warned him never to leave off the regular introduction of the catheter; telling him, that whenever he did so, besides encountering other evils, he would make himself liable to the formation of stone in his bladder. At last, in an evil hour, he forgot my admonitions and listened to some other advice which was given him, that he should lay aside his catheter. At the end of a year from this time I was again called to see him. The urine was now depositing the usual adhesive mucus; and it was evident, from the small masses of the phosphates which it contained, that he was threatened with a stone in the blad-

der. I made him return to the use of the catheter: but it was too late. The stone went on increasing in size, until it became such as you now find it to be. It was at last extracted by an operation, from the first effects of which the patient seemed to recover; but he died soon afterwards, manifestly in consequence of disease in the bladder and kidneys; the operation having accelerated, without having actually occasioned, his death.

Women suffer less frequently from stone in the bladder than men. Their more temperate mode of life accounts, in part at least, for the difference. Much, however, is to be attributed to the more simple construction and greater diameter of the urethra, in consequence of which stones are voided by them, which would inevitably have been retained in the bladder of the other sex.

Mr. Copland Hutchison has published some observations, which are intended to show that calculus of the bladder is very rare among seafaring persons; much more so than in other classes of society: and hence he is led to conclude, that there is something in the peculiar life of a sailor, which is unfavorable to the production of this disease. However, if you bear in mind what I have just now stated, as to the greater prevalence of the disease among children, and among those who are advanced in life, and recollect also that among sailors there are no children, and very few old men, you will, I conceive, find a sufficient explanation of the fact in question, without resorting to Mr. Hutchison's explanation of it. Besides, it must be very difficult to obtain data sufficiently accurate to enable us to form any positive opinion on such a subject. I have myself operated on two officers in the navy, who were affected with stone in the bladder, and in whom the symptoms of the disease began while they were engaged in active service; and I conceive that these are quite as many cases as were likely to occur in my practice, even supposing the disease were as common in the navy as it is among landmen. As to the proportion of common sailors who are admitted into the hospital laboring under stone in the bladder, we have no records enabling us to say any thing on this subject.

It is observed that calculi of the bladder prevail particularly in certain districts, while in some other districts the disease is extremely rare. I have a patient who resides sometimes near Norwich, and at other times near Bristol; and who, at the former place of his residence observes the urine to deposit lithic acid sand, which it never deposits while he is at the latter. This may be attributable perhaps, in part, to peculiar diet and mode of life. Dr. Prout believes, that hard or impure waters tend to the production of calculi. These explanations, however, are not altogether satisfactory. In some districts in which the disease is unusually prevalent, we find, if I am not much mistaken, that there are not only more calculi with a lithic-acid nucleus, but also more with a nucleus of oxalate of lime, than in other parts of the country; and it is difficult to understand how the agency of the same cause should produce, in different individuals, calculi of such different chemical composition, and depending on such different states of sys-



tem. Mr. Cross attributes the greater number of cases of urinary calculi which are met with in Norfolk and Suffolk to the influence of the cold northeast winds which prevail in these counties over the functions of the skin. But if this were the case, there ought to be a larger proportion of bronchial and pulmonary affections in Norfolk and Suffolk also, and I am not aware that this is the case. Besides although the checking of the perspiration may increase the disposition to form lithic acid, I know of no reason to believe that it would increase that to form the oxalate of lime.

A calculus for the most part lies loose in the bladder, being capable of moving, according to the laws of gravity, from one part to the other of the cavity in which it is placed. It is only in a few cases that it is otherwise. Here is a specimen of encysted calculi. The original disease, as you may perceive, was an enlarged prostate gland which prevented the patient from emptying the bladder. I conclude that the catheter was not used, as it ought to have been, for the purpose of emptying the bladder artificially. The consequence has been that the patient was continually straining to make water, and that the mucous membrane, by the pressure of the urine, has been caused to protrude in the interstices between some of the muscular fibres, forming small cells or cysts. Some small calculi, which escaped from the kidney, have found their way into these cysts, and have become lodged or impacted in them.

In the preparation which I now show you, there is a cyst of another kind. The case is in many respects remarkable. I discovered a stone in this gentleman's bladder. But he was advanced in years; and as for the most part he suffered very little inconvenience from the disease; he did not wish to go through any dangerous operation for the sake of obtaining relief; nor did I think it right, considering all the circumstances, to urge him to submit to it. He went on, in general suffering, little or nothing. He was a convivial man, dining a great deal in society, as if he had no ailment. Every now then, however, he was suddenly seized with the usual symptoms of stone in the bladder, and very severe ones too. He then sent to me: I kept him in the horizontal posture, prescribed him an opiate clyster, and in the course of a few days, sometimes sooner, sometimes later, the attack subsided; he was again at his ease, and enabled to return to his usual habits. I had been occasionally in attendance on him for three or four years, when he was seized with a severe cold; which ended in a pleurisy, of which he died. On examining the body, I found the stone imbedded in a cyst near the fundus of the bladder. The cyst was formed in this case, not by the protrusion of the mucus membrane between the muscular fibres, but by a dilation of both tunics of the bladder, the muscular as well as the mucous. It was such a receptacle as you would suppose a large calculus, which had long been resident in the bladder, might gradually have made for itself. If you look at the preparation, you will see that the stone was not so closely embraced by the cyst as to prevent it occasionally slipping out of it; and I suspect that this actually happened, and that it was when the

stone lay in the cyst that the patient was free from the usual symptoms of calculus, and that his sufferings took place when the stone escaped from it into the general cavity of the bladder.

You will hear not unfrequently of calculi which adhere to the bladder; but you may be assured, nevertheless, that this is a very unfrequent occurrence. Ask all experienced surgeons, and they will tell you now, that adhering calculi are rare. It is not very uncommon to find a diseased bladder, a portion of which is incrustated with calculous matter; but that is a very different thing from an adhering calculus, and not likely to be mistaken for a stone in the bladder. It occasionally happens that coagulated lymph is effused from the inflamed mucous membrane of the bladder. The inflamed mucous membrane also secretes that adhesive mucus which contains the phosphate of lime, as I explained to you formerly. A portion of the phosphate of lime thus produced, mixed probably with some of the triple phosphate from the urine, is deposited on the lymph, and thus the incrustation takes place. It corresponds exactly to the incrustation of the wound of the perineum which occurs after lithotomy, where the operation is followed by the secretion of the sameropy mucus from the bladder.

In many instances you find only a single stone in the bladder; in others there are two or three stones. In the latter case they are more or less polished on the surface, from rubbing against each other. Occasionally there is a still greater number of stones in the same bladder,—ten or twenty, or even thirty or forty. The greater the number of stones, the greater the quantity of friction; and you will see in some of the specimens in the museum how calculi, under these circumstances, are rubbed into the form of irregular polyhedrons.

We have next to consider the symptoms produced by calculi in the male bladder.

The first thing, that will strike you, when you come to study the disease in the living person, is, the different degrees of suffering to which different individuals, and even the same individuals, are subject, in different stages of this complaint.

The symptoms differ; 1st, According to the size of the stone, the smoothness and roughness of its surface, and its general figure:

2dly, According to the quality of the urine. Thus, the urine may be unusually acid, or it may be alkaline, and depositing the triple phosphate; and in either case it will be too stimulating for the parts with which it comes in contact, and the symptoms produced by the stone will be thereby aggravated:

3dly, According to the state of the bladder. Nothing aggravates the symptoms so much as the existence of inflammation of the mucous membrane. This increases the sensibility of the bladder a hundred-fold, and causes a small stone to produce a much greater quantity of distress and pain than a large one produces under ordinary circumstances.

If the bladder be healthy, a very small stone produces very trifling, and, indeed, very equivocal symptoms. The patient has the inclination to make water, induced by a rather smaller quantity of urine in



the bladder than under ordinary circumstances. He has a sense of irritation, scarcely amounting to pain, referred to the neck of the bladder, to the urethra, perhaps to the perineum, after the bladder is empty. In one instance, for many months the patient complained of nothing except an occasional pain, and that but trifling, on the inside of one groin, and of the urine being tinged with blood, after riding on horseback. Bloody urine, after any jolting exercise, is a strong indication of a calculus somewhere, either in the bladder or kidney. Where it arises from other causes once, it arises from this cause twenty times. But this symptom is often wanting in the early stage of the disease, while the stone is still small, especially where the patient leads (as often happens) an inactive life. A small stone occasionally falls on the inner orifice of the urethra, while the patient is making water, and thus suddenly impedes or stops the flow of urine. This is one of the most characteristic symptoms of the disease in its origin; but even this is often either wanting, or not observed for a long time.

As the disease advances, and the stone grows larger, other and more decided symptoms show themselves; which may be thus enumerated:—

1. A very frequent desire to make water; the impulse to do so being sudden and irresistible, and liable to be induced by the smallest change of position.

2. Pain referred to a particular point in the glans penis, at the extremity of the urethra; the pain sometimes being described as a severe yet dull pain; at other times compared to the effect of a hot iron applied to the part—that is, what is called a burning pain. This pain is most severe after making water, and on taking exercise, when the stone falls suddenly down on the neck of the bladder.

This pain in the glans penis is one of the most marked symptoms of the disease. A child who labors under stone in the bladder tells you of it not in words, but by his actions. He is always pulling the end of the penis, and pinching it with his fingers, even so as to cause the prepuce to become elongated. You often find his fingers having the cuticle soft and sodden (as if they had been soaked in hot water), from the urine which has been imbibed.

3. The urine is frequently stopped as it flows from the bladder, by the stone falling against the inner orifice of the urethra.

4. Where there is a calculus even of a moderate size in the bladder, it rarely happens that the urine retains its natural clearness and transparency. A slight cloud is perceptible in it as soon as it begins to cool, and a mucous deposit takes place afterwards.

The disease, in some instances, may exist for many years before any severe symptoms arise. A gentleman had suffered in some degree for upwards of ten years: but the symptoms were so very slight that they did not in the smallest degree interfere with his comfort and usual habits. At the end of that time, being in London, he consulted me respecting them; but he felt so little inconvenience, and the subject so little attracted his attention, that his doing so seemed to be

almost a matter of accident. I examined the bladder, and detected in it this enormous calculus, which I now show you. Some months afterwards, his symptoms became much aggravated. He now said that he could bear them no longer, and I removed the stone by the usual operation.

This case, however, is not in the common course of events. In general the symptoms are progressive, and reach their height, so that the patient becomes a very great sufferer, in the course of two or three years.

At first his general health is unaffected; but at last the health begins to suffer, the urine becomes alkaline, and the triple phosphate is deposited on the original stone. The growth of a stone composed of the phosphates is much more rapid than that of one composed of the lithic acid. But this is not the only cause of the aggravation of the symptoms which now takes place. The alkaline urine is more stimulating to the bladder than healthy urine, and this is one source of the patient's increased sufferings. Another reason is, that that state of the general health, which causes the alkaline urine to be secreted by the kidney, is attended with an increased or morbid sensibility of the nervous system generally.

As the disease advances, the continued irritation kept up by the stone induces inflammation of the mucous membrane of the bladder. There is now a still further augmentation of the patient's sufferings. The stone is rolling about in an inflamed bladder; and you know how the sensibility of every organ in the body is increased by inflammation. The existence of this state of things is indicated by greater pain, and by the desire to make water being almost constant; by the urine being voided offensive to the smell, soon becoming putrid and ammoniacal, and depositing the usual thick, tenacious mucus, streaked with blood. This mucus, as I have already explained to you, leads to the formation of the fusible calculus; and all that I have now stated will enable you to understand that different kinds of calculus are attended with different degrees of suffering. A patient with a simple lithic-acid calculus suffers less than one with a calculus composed externally of the triple phosphate; and the latter less than a patient with a fusible calculus. The oxalate of lime or mulberry calculus, on the whole, occasions more distress than the lithic-acid calculus; probably on account of the irregularities which so frequently exist on the surface of the former; but it occasions less distress than the calculi composed of the phosphates.

Patients with diseased and enlarged prostate do not, in general, suffer more from the stone in the bladder than other individuals. Indeed, I am inclined to believe that, on the whole, they suffer less; probably in consequence of the tumor of the prostate preventing the stone falling down on the neck of the bladder. I have, however, seen three cases, in each of which there was a stone in the bladder, complicated, not only with an enlarged but with an ulcerated prostate; and the sufferings of these patients were greater than I had ever before witnessed in persons laboring under the same, or, I might



almost say, under any other disease. In two of these cases, the surgeon, who was in attendance, indiscreetly (as I think) performed the operation of lithotomy. One of them died in about five minutes after the operation; the other became immediately comatose, and died in a few hours. The third patient was admitted into our hospital, under the care of the late Mr. Ewbank. The symptoms were precisely similar to those which existed in the two other cases; and Mr. Ewbank, on the result of these cases being stated, very properly determined not to perform an operation, although the man had come into the hospital for the purpose. The poor fellow died in two or three days afterwards; and, on examining the body after death, we found a large stone and an ulcerated prostate, as had been anticipated.

Calculus in the bladder induces frequently an irritable state of the urethra, and thus causes a spasmodic stricture. It induces also increased efforts of the bladder to expel the urine; and thus the muscular coat of the bladder, after a certain time, always becomes increased in thickness.

I have mentioned three cases of calculus in the bladder complicated with ulceration of the prostate gland. But in these cases there was also inflammation of the mucous membrane of the bladder, and, as far as I have seen, such inflammation is never absent where the patient falls a victim to this disease. A moderate degree of inflammation of the mucous membrane may exist for a great length of time without causing irretrievable mischief; and if the stone be extracted, the inflammation may subside, and the patient may recover perfectly. But if the chronic inflammation becomes aggravated, so as to assume the character of acute inflammation, or even to approach it, the situation of the patient becomes dangerous, and, in fact, almost desperate. The inflammation extends up the ureters to the kidneys, and these last-mentioned organs become diseased in the same manner as in other cases in which inflammation is communicated to them from the mucous membranes. The inflammation also in some instances extends, through the muscular tunic of the bladder, into the atmosphere of loose cellular membrane by which the bladder is surrounded, and putrid sloughing abscesses are formed in it. I need not enter into a particular history of what occurs where these complications exist. The symptoms of disease in the bladder, or disease in the kidneys, are superadded to those of calculus in the bladder; and it is sufficient for me to refer you to the observations which I made on these subjects in my Lectures on the diseases of the bladder and prostate gland.

In some cases, but these are very few in number, the bladder ulcerates, and the stone escapes from its cavity. The bladder exhibited in this preparation is seen to have been ulcerated at its fundus. There were several calculi, and one of them, as you will perceive, had stuck in the ulcerated opening, and lay half in, half out of, the bladder. A middle-aged man was admitted into this hospital, in the year 1810, who had labored under symptoms of stone in the bladder for the preceding ten years. He had also a fistula in perineo. Sir Everard Home proceeded to extract the stone by the usual operation.

When, however, he had introduced the gorget, he found the stone (of the size of a walnut) lying in its concave surface, and he removed it with his fingers. No other stone could be discovered. The patient died on the fourth day after the operation. On examining the body after death, the bladder was found to be very much contracted, so that it was scarcely capable of containing an ounce of fluid. That which had been its muscular coat had degenerated into a kind of ligamentous substance. The mucous membrane bore marks of having been in a state of inflammation: it was extensively ulcerated; and the ulcer communicated with an ulcerated cavity in the perineum, in which the stone was lying at the time of the operation. The *fistula in perineo* has an inner opening in the membranous portion of the urethra. It may be worth while to mention that, in this case, one kidney was reduced to a third of its natural size, and contained a considerable quantity of pus. The ureter on this side had its cavity entirely obliterated: it was nothing more than a ligamentous cord, extending from the kidney to the bladder.

A case came under my observation, in which the patient died in a very short time after the operation of lithotomy, and in which after death, a very large abscess was discovered in the pelvis, communicating with the bladder by an ulcerated opening near the prostate gland. In another case, there was an abscess, which occupied nearly the whole pelvis, but having no communication with the bladder. Both of these cases occurred, many years ago, in our hospital, under the care of Sir Everard Home. I mention them, because the patients died so soon after the operation, that it was evident that the abscesses must have existed before it was performed; and that they were the consequence of the disease, and not of the operation. In another case, also, in which the patient died in our hospital, under the care of Mr. Babington, in consequence of a stone in the bladder, without having undergone the operation, a considerable abscess was discovered in the pelvis. I suspect that such an abscess is not an uncommon occurrence where the patient is allowed to linger and die of the disease.

---

There is a class of cases, which, being of rare occurrence, do not seem in the present state of our knowledge, to be of much practical importance, but which I am unwilling to leave altogether unnoticed, especially as they exhibit a phenomenon of some interest in pathology.

In the Transactions of the Royal Society of London for the year 1731 there is a letter from Dr. Lawrence Heister, giving the history of a patient who having, for a considerable time, laboured under the symptoms of stone in the bladder, began to void by the urethra what had all the appearance of portions of a large calculus, broken down into fragments of various shapes and sizes. The number of these



fragments at last amounted to more than two hundred, and now the discharge of the fragments ceased, the symptoms at the same time having subsided, and the patient being restored to perfect health.

In this instance the discharge of the fragments of the calculus was attributed to the use of certain mineral waters; but a case is recorded by Dr. Prout in which the same thing happened, without the use either of mineral waters or of any other kind of medicine; and Mr. Cross has furnished us with two other cases, the account of which I shall give in his own words:—"I lately obtained from a gentleman, after a ride on horseback, numerous fragments of calculi thus produced" (that is, by knocking against each other); "and in my cabinet there are twenty-two calculi, removed after death from a patient seventy years of age, which are of a very irregular shape, but admit of being so arranged as to form four regular and well-shaped calculi, each of the size of a pigeon's egg, which, with the appearance of the different surfaces, proves that the calculi had broken in the bladder, by knocking against each other under certain movements of the body. The incrustated state of the fractured surfaces proves that the calculi were broken some time before the death of the individual."

Many years ago I had the opportunity of seeing several calculi, which were evidently fragments of a larger calculus, and which had been voided with the urine by a young lady. I knew no other particulars of the case, nor how it terminated. Some years have also elapsed since Mr. Green and myself were consulted respecting a gentleman who had come to London from the country, with a great number of calculi, of a small size, in the bladder. The day after his arrival he voided several of these which had the appearance of having been recently broken, probably from the concussion of them one against the other during the journey. A third case came under my observation, which was more remarkable than either of the preceding, and not less fortunate in its result than the one recorded by Heister. A gentleman who had passed the middle period of life, consulted me concerning an affection of his bladder. I discovered in it what appeared to be a calculus, and not of very small dimensions. I advised him to submit to the operation of lithotomy. The patient, however, was a timid person, and could not make up his mind to follow my recommendation. Having heard of some mineral water which had the reputation of doing good in cases of this description, he went to reside near the spring, in order that he might give the remedy a trial. How long he drank the water, or whether what I am about to mention occurred while he was still drinking it, or not until after he had ceased to do so, I am not certain. Be that as it may, he began to void, with his urine broken pieces of calculi, of various shapes and sizes, but generally with one convex and one concave surface, and rough irregular edges, as if the various laminæ of which the calculi were composed had cracked, and then had become separated from each other. After some time, a great number of these fragments having come away, the discharge of them ceased, the patient being, at the same time, relieved from all the symptoms under which he had formerly labored.

He died (as I have been informed), some years afterwards, of another complaint.

I give you these facts without any comment. Future observations are required to enable us to give a satisfactory explanation of them. In the mean time we cannot doubt that the subject is well worthy the attention of pathologists.

---

## LECTURE XII.

### *Calculi of the Bladder—continued.*

MANY of the observations which I have hitherto made are applicable to cases of calculi in the female, as well as to those of calculi in the male sex. Others are applicable to the disease in the male sex only, and something is still necessary to complete the history of it in the female.

In women, for reasons which I have already stated, the disease is comparatively rare. It is of course difficult for an individual to form an estimate of the number of cases which occur in women, as compared with those which occur in men; but judging from what I have seen in my own practice, I should say, that the proportion is as one to fifteen or twenty. In women the disease occasions a frequent desire to make water. There is pain, especially after making water, referred to the extremity of the urethra. The urine is tinged with blood after taking exercise, and it undergoes the changes which cause the deposition of the triple phosphate, and afterwards that of the phosphate of lime, such as I have described in speaking of the disease in the male sex.

I may avail myself of this opportunity of mentioning a remarkable case of calculus in the female bladder, which fell under my observation in the year 1840. Mr. North and myself were consulted respecting a young lady laboring under very aggravated symptoms of this disease. The existence of a calculus having been ascertained by the introduction of a sound, I proceeded to extract it by an operation. The membrane of the urethra was divided at the upper part, and the canal was afterwards dilated in the manner which I shall describe hereafter. On examining the bladder with the finger, previously to the introduction of the forceps, I ascertained that the calculus was adherent to the inner surface of the bladder, near the fundus. However, I seized it with the forceps, and with the application of a moderate degree of force I was enabled to extract it, though not without its being broken into several pieces. These fragments were found to consist chiefly of the mixed phosphates, but among them were a small portion of bone of an irregular figure, and two imperfectly formed human teeth. If you refer to the tenth volume of the *Medico-Chi-*



rurgical Transactions, you will find a case and dissections recorded by Dr. Phillips (at the time residing at Andover), which fully explains the nature of the case in question. The teeth and bone, the result of an original mal-formation, were attached to the mucous membrane of the bladder, and formed the nucleus on which the calculous matter had been deposited. A similar case occurred in the practice of Mr. Warner, and is described in the forty-ninth volume of the Philosophical Transactions.

I should add, that some rather severe symptoms followed the operation. The patient, however, ultimately recovered; and, as far I know, has suffered no inconvenience since.

### *Diagnosis of Calculus in the Male Bladder.*

You must, of course, satisfy yourself, in the first instance, whether a calculus actually exists in the bladder. The symptoms, in general, are sufficient for this purpose; but you must not rely on the symptoms only. They will rarely mislead you, but they will sometimes. There *may* be a stone in the bladder, without the usual symptoms; and there *may* be many of the usual symptoms, without a stone in the bladder. In children, especially, the deposition of lithic acid sand by the urine will not unfrequently produce, not only pain in the glans, but bloody urine, and all the other symptoms of stone in the bladder. A boy, between four and five years of age, was brought to me who had a constant inclination to make water. He screamed with pain as the urine flowed: he was perpetually squeezing the extremity of the penis between his fingers, as if he referred the pain to that part; and the urine was deeply tinged with blood. I scarcely entertained a doubt that there was a stone in the bladder. I examined the bladder in the way which I shall explain to you presently, but no stone was discovered. I examined it again and again, but still there was no stone. I then inquired more particularly into the child's health in other respects; and the result was, that I was led to prescribe an occasional dose of calomel and rhubarb, with rhubarb and sal polychrest in the intervals; and under this simple plan of treatment all the symptoms disappeared in the course of a few weeks.

Before you venture to give a positive opinion as to the presence of a calculus in the bladder, you must examine the latter by means of an instrument introduced into it by the urethra. Thus the stone may be made cognizable to the senses, and you may know that it exists with as much certainty as if you actually saw it. We commonly employ, for this purpose, the instrument which I show you now, an iron sound, having a curve approaching to that of a catheter. The sound ought to be large enough nearly to fill the urethra, but not to stretch it. If it be too large, it is closely embraced by the urethra, and the free motion of it in the bladder, so necessary for detecting a calculus, is prevented. The handle of the sound should be flattened, smooth, and polished, in order that the fingers may be in contact with as many

points as possible. In general we introduce the sound while the patient is lying on his back; but sometimes we detect the stone more readily when the patient is in the erect posture. Where the stone is large, the sound strikes readily at once, whether there be, or be not urine in the bladder; but if the stone be small, it is often difficult to detect it unless the bladder contains a certain quantity of fluid.

You should be provided with sounds of different shapes and sizes; but that which I find it most convenient to use in the majority of cases in the adult is nearly eleven inches in length exclusive of the handle, about three sixteenths of an inch in diameter; the last three inches of it being bent so as to form nearly, but not exactly, part of a circle, the diameter of which is three inches and a half. It is best to draw off the urine first, and afterwards to inject through the catheter four or five ounces of tepid water into the bladder. The sound, such as I have described, being then introduced, the point of it is easily turned in any direction, so as to explore every part of the bladder. The examination may thus be very completely made. Nevertheless, if the symptoms are well marked, it will be unwise of you to conclude that there is no calculus, because you do not detect it in the first instance. I have known the most practised surgeons, with the most delicate sense of touch possible, use the sound several times, where the calculus was of a small size, before they felt it so distinctly as to be satisfied of its existence.

In some cases, a calculus which has not been discovered by means of the sound is at once detected by means of the elastic gum catheter. This is an observation made by Sir Everard Home, the correctness of which I have had frequent opportunities of verifying. The gum catheter should be introduced without the iron stilet, while the patient is standing, with his bladder full of urine. You allow the urine to flow through the catheter; and as the last portion of it comes away, the calculus falls down on the extremity of the instrument, in withdrawing which you feel it quite distinctly. Judging merely from the texture of the gum catheter, I never should have believed it capable of affording such certain evidence of a foreign body in the bladder as I know that it does from experience.

In some instances you may feel a calculus in the bladder with the finger introduced by the rectum. This method of examination is often useful in children, where the stone is above the middle size. It seldom affords you any assistance in the adult, except where the calculus is of extraordinary dimensions.

It is not sufficient that you should ascertain the existence of a calculus; it is of importance also that you should, if possible, learn something as to its size and composition.

You cannot, of course, actually measure or determine, accurately, the size of a calculus which lies concealed in the bladder; but, nevertheless, you may form some notion on the subject which will not be very far from the truth. If the symptoms show that the disease had existed only a short time, and the urine has been, and is, of an acid quality, you may conclude that it is, in all probability, composed either



of lithic acid, or of oxalate of lime. Such calculi are not of rapid growth; and under these circumstances it is not probable that it can be of large dimensions. But if the urine has become alkaline, you will know that the last-deposited layers of the calculus are composed of the phosphates; and calculi of this last description are of more rapid growth, often attaining a considerable size in a moderate space of time. Whatever may be the composition of the calculus, if it has existed for a great number of years, it is to be expected that it will prove to be a large one. These considerations, however, carry you only to a certain point. You may obtain a more precise knowledge in the following manner:—Measure the calculus, by causing the convex part of the sound to traverse its upper surface from one extremity of it to the other.

When the bladder is full of urine, strike it with the sound, or with the end of the gum catheter. Observe what quantity of force is necessary to push it out of the situation in which it lies; and, accordingly, as it is displaced easily or with difficulty, so you may form an estimate of its weight and magnitude.

As connected with the diagnosis of calculi in the bladder it is right that I should caution you not to be misled by impostors, who pretend to labour under this disease, although they do not labor under it in reality. This is no uncommon species of deception. Some practise it for the purpose of exciting compassion, and obtaining money from charitable persons; others with a view to make themselves objects of attention and interest in their own families; and in not a few it can be referred to nothing but that perverted state of mind which so frequently accompanies hysterical affections. I saw some pieces of limestone which were actually extracted by means of the forceps, at various times, from the bladder of a female, who, having carved them of a suitable shape, had contrived to introduce them into that organ through the urethra. She was sufficiently skilful to impose for some time on a very well informed surgeon, as well as on many kind-hearted ladies, from whom she levied in consequence considerable pecuniary contributions. In another case several ounces of small pebbles and pieces of brick-bat were produced by a well-educated and accomplished young lady, living in ease and affluence, as having come from her bladder while in a water-closet. I am unwilling to multiply histories of this kind, degrading as they are to human nature. What I have already stated will answer the intended purpose. The mere appearance of the pretended calculi is in general sufficient to unravel the whole mystery. You may have recourse to chemical analysis if further evidence should be required.

#### *Treatment of Calculi of the Male Bladder.*

When a calculus passes from the kidney into the bladder, the diameter of which is less than that of the urethra, it is usually conveyed into that canal by the impulse of the stream of urine, and thus the patient is relieved of his disease. Sometimes, however, even a very

small calculus is prevented escaping in this manner, in consequence of an enlargement of the prostate gland forming a tumor projecting into the bladder, and making a kind of valve behind the orifice of the urethra. Many a person is liable to the descent of calculi from the kidney for many years, which are always passed with the urine, until he becomes somewhat advanced in life. Then the prostate becomes enlarged, and the calculi, which descend afterwards, are retained in the bladder.

Under these circumstances, it will be prudent for the patient to void his urine lying on his face, or leaning very much forward, so that what we call the anterior may become the depending part of the bladder. You will observe, that the valve made by the projecting tumor of the prostate is invariably on the posterior part of the bladder—that is, towards the rectum; and if the patient voids his urine in the posture which I have mentioned, the calculi are less likely to be interrupted by it than if he voids it in the usual manner. This, at least, is good in theory, and I may say that it is as good in practice also; for a patient of mine, an elderly gentleman, whom I advised to do what I have just mentioned, very soon became relieved of a small stone which had been for some time in the bladder.

A calculus which is of larger diameter than the urethra, of course cannot be voided by that canal. But you may dilate the urethra; and by doing so I have, in a great many instances, enabled the patient to void a calculus which had been for some weeks, or even for some months, in the bladder, and which he certainly could not have voided otherwise. The case here admits of little delay. Every day adds to the bulk of the calculus, and diminishes the chance of success. Introduce a bougie, or a metallic sound, of such a size as the urethra will admit without inflammation being induced. Every day, or every other day, according to circumstances, introduce one a little larger; and thus you may dilate the urethra gradually, until it is a good deal larger than its natural size. The degree of dilatation of which the urethra is capable varies in different cases; but it is generally considerable. When this process has been carried as far as it can be, let the patient drink plentifully of diluting drinks. It may be worth while even to give some of the compound spirit of juniper, or other diuretic, at the same time; and the calculus will probably, some time or other, be carried, by the current of urine, into the dilated urethra. You may add to the chance of the expulsion of the calculus, by adopting the following method:—Once daily introduce a large bougie into the urethra and bladder, and there let it remain. Then let the patient drink plentifully of barley-water, or toast and water, or weak tea, so that the bladder may become loaded with urine. When the patient can bear the distention of it no longer, let him place a vessel on a chair, standing and leaning forward over it. On the bougie being withdrawn, the urine will follow in a full stream, and the calculus may probably accompany it. I learned this mode of treatment from a patient who contrived it for himself, and who in this manner became relieved of three considerable calculi, for which an intelligent and ex-



perienced surgeon, in a provincial town, had recommended him to undergo the operation of lithotomy.

If a small calculus cannot be made to pass in the way that I have mentioned, you will probably succeed in extracting it from the bladder by means of the urethra forceps. Indeed, I may say, that you will never fail in doing so, unless the calculus is beyond a certain magnitude, or there is something in the condition of the bladder to prevent it from retaining a moderate quantity of urine; or unless there is a large tumor of the prostate projecting into the bladder, behind which the calculus may lodge, out of the reach of the instrument.

I cannot but regard this discovery of a method of extracting very small calculi from the bladder without the aid of cutting instruments as one of the greatest achievements of modern surgery. The credit of it belongs to an individual who has contributed in a variety of ways to the improvement of our art. I scarcely need tell you that I mean Sir Astley Cooper. But even he would not have succeeded in attaining the object which he had in view, if he had not been aided by the mechanical talents of Mr. Weiss; who, when the matter was explained to him, contrived the forceps which I now show you. Sir Astley Cooper has recorded his experience on the subject, in two papers published in the eleventh and twelfth volumes of the *Medico-Chirurgical Transactions*; and to these I may refer you, if you wish to become acquainted with the history of this invention, and of the cases to which it was first applied.

But it was not to be supposed that such a novel operation could be brought at once to a state of perfection. The forceps which Mr. Weiss originally constructed is liable to these objections. It is difficult to explore with it every part of the bladder; and in opening the blades, the neck of the bladder is always painfully dilated. The same thing may be observed respecting another forceps made on my suggestion afterwards. Mr. Weiss has since contrived a kind of forceps on another principle, and which is much better adapted for the intended purpose. A single inspection of it will make you better acquainted with its construction than the most labored description. You will observe that it is composed of two pieces of steel, one sliding longitudinally in a groove of the other. The extremity which enters the bladder is curved, but not in the manner of a common catheter; the curve being more abrupt, and the curved part considerably shorter. When the forceps is to be opened, the sliding piece is drawn towards the handle of the instrument; and thus the blades, in being separated, are still kept parallel to each other. They are closed by an opposite movement.

In using this forceps, you should select one of as large a size as the urethra will readily admit. If you have reason to believe that the calculus is of a very small size, or that there are several small ones, it is better that the opposite surfaces of the blades should be made concave; otherwise they may be nearly flat, and somewhat serrated. The patient should be laid on his back; and it is generally better that his pelvis should be supported by a thick cushion, so that it may be higher

than his shoulders. The first step of the operation is to introduce a silver catheter, and thus empty the bladder of its contents. From five to six ounces of tepid water are then to be injected into the bladder, so as to distend it moderately. If any considerable portion of the water should escape, the injection should be repeated, *it being absolutely necessary that the operation should never be attempted on an empty bladder.* The forceps is next to be introduced, and of course with the blades closed. It is first to be used as a sound, so as to ascertain the exact situation of the calculus. If this be not readily detected, the patient may be directed to turn on one side, placing himself on his back again afterwards; by which change of position the calculus may probably be made to roll into some more convenient place, within reach of the forceps. The blades of the forceps are then to be cautiously opened over the calculus, and afterwards closed upon it. By this simple management with a light hand, the calculus is seized with facility in many cases; otherwise you may adopt the following method, which rarely fails:—Let the forceps be opened with the convexity of its blades pressed against that part of the bladder which is towards the rectum, so as to make it the lowest or most depending situation. Then, by a slight motion given to the handle of the instrument, the calculus is made to roll into its grasp; and thus I have often been enabled to remove several small stones at once.

The advantages arising from the elevation of the pelvis is, that the calculus is then less liable to be lodged near the neck of the bladder, where the seizing it is always more difficult than when it lies near the fundus. Attention to this point is especially of importance in cases of enlarged prostate. Sometimes, however, when the calculus is very large, notwithstanding this precaution, it will remain in the hollow behind the prostate. You should make no attempt to seize it when it lies in this situation, but endeavor, by varying the position of the patient to make it roll into some other part of the bladder, or else defer the operation to some future opportunity.

When the calculus is grasped, you may know exactly its diameter by means of a scale fixed to the handle of the forceps. If it be of a very small size, you have only to withdraw the forceps from the bladder in the usual manner, and the stone with it. If it be of a very large size, so that it is evident that it cannot be made to enter the urethra, you need only to open the forceps again to set it at liberty; and you may then determine, at your leisure what other method should be adopted for the patient's relief. But the forceps may seize a calculus of an intermediate size; one which may be made to enter the urethra to a certain distance, being then stopped by some narrow portion of the canal. The neck of the bladder is very easily dilated, and a calculus of considerable size may be drawn into that portion of the canal which lies in the perineum. It may then be very distinctly felt through the integuments behind the scrotum, and if a small incision be made on it in this situation it is easily extracted, the forceps, after the removal of the stone, being closed, and withdrawn in the usual manner. I have performed this operation several times,



and have extracted calculi of more than an inch in one, and of nearly an inch in another, diameter. It is so simple, that, in two instances in which I had recourse to it, although I had no pair of hands to assist me but my own, it was not attended with the smallest difficulty. The patient should be directed to remain in bed afterwards, and an elastic gum catheter should be allowed to remain in the urethra and bladder, for the purpose of drawing off the urine, and preventing it dribbling through the wound. With this precaution, the wound will, in some instances, be enabled to heal in less than a fortnight.

But it will sometimes happen, that the calculus which is easily drawn through that part of the urethra which lies in the perineum meets with an impediment in the anterior part of the canal; that is, either at the external orifice, or exactly at the anterior part of the scrotum, or somewhere in the intermediate space. If the impediment be closed to the orifice, that part is easily dilated by means of a probe-pointed bistoury; and if it be in another part of the canal, you may remove it by means of an incision made through the skin, *corpus spongiosum*, and membrane of the urethra. *Let me caution you, however, never to make such an incision into the urethra immediately in front of the scrotum.* It is difficult, when you do so, even by the constant retention of an elastic gum catheter, to prevent a small quantity of urine finding its way into the loose cellular texture of the scrotum; and this may be productive of a succession of troublesome abscesses, or even of dangerous consequences. If a calculus seized by the forceps can be drawn so far forwards in the urethra, it may be always drawn somewhat further; or if the forceps be so constructed that the blades may be closed and compressed by means of a screw, it may be crushed while in the urethra, and thus removed in fragments. On the last mentioned subject, however, I must refer you to a future Lecture, in which I shall treat of the operations of lithotomy.

I have been thus particular in describing the use of the urethra forceps, because I am satisfied that there is nothing in surgery more deserving than this is of the attention of the student. If ever the period should arrive, at which surgeons generally have made themselves expert in the performance of this operation, and the public are made fully aware of the great importance of their making an early application for relief, the disease of stone in the bladder, now so terrible, will be regarded as a comparatively trifling ailment; and with a few exceptions, patients who labor under it will no longer feel that they have to choose between a miserable death from the disease, and the employment of a dangerous remedy.

Before I quit the subject, I ought to mention, that I have found this method of treatment applicable to cases which I was formerly accustomed to consider as being nearly hopeless. I have already explained to you in what manner, where the mucous membrane of the bladder is affected with a chronic inflammation, a multitude of small irregularly shaped calculi become collected in it, composed chiefly of phosphate of lime deposited by the adhesive mucus, which is secreted under these circumstances. Such cases are altogether unfit for any

serious operation; and the patients usually die after some months, or even one or two years, of lingering misery. In the summer of 1833, however, an elderly gentleman, laboring under this complication of disease, with the addition of an enlargement of the prostate gland, placed himself under my care. The urine was ammoniacal, filling the chamber with an offensive odor, and depositing a large quantity of adhesive mucus. The desire to make water was incessant, and the act of making it was attended with the greatest suffering. On the introduction of a sound, a large quantity of calculous matter was detected in the bladder. The patient was unable to empty the bladder by his own efforts; there being always a residuum of two or three ounces of urine left in it. In the treatment of the case, I began with drawing off the urine once daily, by means of an elastic gum catheter, washing out the bladder by an injection of tepid water afterwards. I then added a single minim of the concentrated nitric acid to each ounce of the water used for the injection. This local application was attended with excellent results. The mucous secretion became very much diminished in quantity; and the bladder at the same time so much less irritable, that four or five ounces, either of urine or warm water, could be retained in it without much inconvenience. I now proceeded to extract the calculi which it contained, by means of the urethra forceps. None of these were of a large size, but they were very numerous, so that several operations were required, occupying, with the necessary intervals, not less than four or five weeks. At last the whole of them were extracted. The chronic inflammation of the mucous membrane now completely subsided; but as the patient still was unable to empty his bladder, I recommended that he should use the catheter at regular intervals, always injecting some tepid water after he had drawn off his urine. The patient lived in a state of comfort for nearly a year, when, being, as I have already stated, an old man, he died of another complaint.

---

However useful the method of treatment which I have just described may be while the stone is still of small dimensions, it is evident that it can be of no avail in other cases. We must resort to other expedients, whenever the stone is of too large a size to be drawn easily through the neck of the bladder.

It has been observed by chemists, that lithic acid admits of being dissolved by a strong solution of pure or caustic alkali. It has been also observed that calculi composed of the phosphates are acted on by the mineral acids; and it may not unreasonably be entertained as a question, how far those changes, which take place out of the body, may be produced while the calculus is still in the bladder of a living person.

This problem, of the solution of calculi by chemical agents, has occupied the minds of many individuals both in past and present



times. It has been proposed by some to administer the menstruum by the mouth, so that it might be conveyed into the urine by the usual channels; and by others to inject it into the bladder, by means of a catheter. This subject is one of great interest, and well deserves our serious and unprejudiced consideration.

I fear that those who have expected by these methods to relieve patients of lithic-acid calculi, have much over-rated the effects of alkaline *lixivia* on them. The fact is, that although alkalies certainly are capable of acting on this kind of calculus, their action, except when employed in a very concentrated form, is so inconsiderable as to amount to almost nothing. Neither the stomach nor the bladder is capable of bearing the quantity of alkali which is necessary to the production of the desired effect; and even if they were, it would be impossible to maintain so constant a supply of the alkali as would be necessary to the destruction of a calculus of even moderate dimensions. Mr. Brande, moreover, has observed that the carbonates of potass and soda have no action on lithic acid; that they are incapable of dissolving it; and that, if the pure alkali be taken by the mouth, it never reaches the bladder in this state, but only in that of a carbonate: and here, then, is an insuperable objection to all attempts to dissolve lithic-acid calculi by means of alkalies taken into the stomach. When there is a lithic-acid calculus in the bladder, and the lithic-acid diathesis prevails in the system, the first effect of alkalies taken into the stomach is to render the urine neutral; thus preventing the further increase of the calculus. So far, then, alkalies are useful. But if they are administered in still larger quantity, so as to render the urine alkaline, the phosphates begin to be deposited. The calculus then continues to grow even more rapidly than before; but its composition is altered, and layers of the triple phosphate are deposited on the lithic-acid nucleus. Such is the view of the subject taken by Mr. Brande; and if you read what he has said on the subject in his papers on calculi, you will, if I am not much mistaken, be satisfied that it is well founded.

But you will, not improbably, hear of cases in which it has been supposed that, under the use of alkaline medicines, calculi have come away by the urethra, broken down into fragments; and you will hear of others in which, under the same mode of treatment, the symptoms dependent on the calculus have vanished; and this circumstance has in itself been regarded as a sufficient proof of the calculus having been dissolved, although no calculus matter had ever been discovered in the urine. But none of these cases will stand the test of critical inquiry. I have in a former Lecture referred to some remarkable cases, in which calculi seemed to have been actually broken into pieces in the bladder. But however it was that this happened, it is evident that it was to be attributed to the operation of mechanical causes, and not of chemical solution. In other cases the supposed fragments, instead of being parts of an old stone dissolved, have been actually a new formation—the mischievous result of the indiscreet and unscientific exhibition of alkaline medicines. Such cases, in-

stead of adding to the laurels of surgery, only show how this important and useful art may become a source of evil instead of good, when it falls into the hands of the inconsiderate or ignorant. With respect to the cases of the second order, you will observe, that, when you come to investigate them, you never find that the symptoms have altogether and completely subsided. There has been some diminution of them, but that is all; and various circumstances will explain whatever amendment has taken place. Thus a stone may become encysted, which was not so originally. So it was, probably, in a case, the history of which I related in a former Lecture. Another remarkable example of this occurrence presented itself to Sir Astley Cooper and myself. A gentleman, about sixty-six years of age, consulted us concerning a frequent desire to make water, attended with pain and other symptoms, such as a stone in the bladder might occasion. We had a suspicion that there was a stone in the bladder, and had purposed to examine the bladder with a sound. Previously to this being done, however, the symptoms began to subside, so that the patient suffered comparatively little inconvenience from them. About a year and a half afterwards he died of another, and wholly different disease. On examining the body after death, we found, at the fundus of the bladder, a cyst formed by the protrusion of the mucous membrane between the muscular fibres; and in this cyst was lodged a calculus of the size of a hazel-nut, of which it seemed impossible to doubt that it had been the cause of all the distress which the patient had suffered formerly. Now let us suppose that, in such a case as this, the existence of the calculus having been ascertained, the patient had gone through a course of alkaline medicines; would it not have been supposed by himself and his friends that the alkalis had produced a cure?—and if the real circumstances had not been disclosed by a *post-mortem* examination, would not the case have been handed down, as affording an example of the great influence of alkalis over calculous disorders?

Another circumstance may occasion a considerable abatement of the symptoms of stone in the bladder; namely, an enlargement of the prostate gland. The more urgent symptoms produced by a calculus arise from its coming in contact with the internal orifice of the urethra. But where the prostate is enlarged, so as to form a tumor projecting into the bladder, this is in great measure prevented. The calculus becomes lodged, as it were, in the hollow behind the tumor, and is thus prevented falling down on the neck of the bladder; and if the enlargement of the prostate supervenes on a stone in the bladder, the symptoms in the latter disease are likely to be, in no inconsiderable degree, relieved. Sir Everard Home has published an account of two cases, the circumstances of which are, as it would seem, to be explained in this manner. These cases are especially interesting on this account,—that both of them had been published while the patients were yet alive, in proof of the efficacy of solvents. In each of them, the stones, which were supposed to have been dissolved, were found in the bladder after death, apparently unaltered. I may mention as a



matter of curiosity, that one of these patients was Sir Everard's own father.

The mineral acids undoubtedly exercise a much greater chemical action on calculi composed of the phosphates, than alkalies do on those which are composed of lithic acid. It is not, indeed, possible to exhibit them by the mouth in such quantity as to render the urine sufficiently acid for the purposes of a solvent; but we have no right to conclude from thence that they may not produce this effect if injected into the bladder by the urethra.

I have already explained the use of injections of a weak solution of nitric acid, in relieving chronic inflammation of the mucous membrane of the bladder. In making further experiments on the subject, I found that where the mucous membrane was not inflamed at all, or inflamed only in a slight degree, the proportion of the nitric acid might be increased to two minims or two minims and a half of the concentrated acid to an ounce of distilled water, without any ill consequences, or even inconvenience, arising from it. I next endeavored to ascertain to what extent a solution of this strength was capable of acting on a calculus of the mixed phosphates. The change produced was sufficiently obvious, especially when the solution was made to pass over the calculus in a stream for a considerable time. It gradually diminished in size, and at last began to be broken down into minute fragments. About this time, an elderly gentleman consulted me under the following circumstances:—He had labored under stricture of the urethra for a great number of years. The stricture had been much neglected; and, at last, had produced the usual consequences—disease of the bladder—that is, chronic inflammation of its mucous membrane, and, probably, disease of the kidney also. The patient had an almost incessant desire to void his urine; every attempt to do so was attended with the most excruciating pain; the urine, at the same time, being highly alkaline, offensive to the smell, depositing a large quantity of viscid mucus, with which were blended small particles of phosphate of lime, resembling mortar. He was drinking lime-water, which some one had advised him to take, with great perseverance, and, the more he drank, the more he suffered, and the more mortar came away. This, he thought was all as it ought to be; and he expressed himself as patients often do under the same circumstances, saying that, no doubt, it was better that he should get rid of the gravel, and that the lime-water must be doing him good. However, not being so well satisfied on this point as my patient seemed to be, I advised him to leave off the lime-water. The symptoms were immediately altered for the better; but still they were bad enough. The next step was to introduce a catheter, and afterwards a sound, into the bladder. When this was accomplished, which, on account of the contracted state of the urethra, was at first not without some difficulty, I at once detected a calculus. Here, then, was a case of calculus manifestly composed of the phosphates, arising out of a diseased state of the bladder, and a case in which the danger of any kind of operation would have been so great, that no prudent surgeon would think him-

self justified in recommending it to the patient. Dr. Prout was consulted at my request, and he agreed with me in thinking, that, under the peculiar circumstances of the case, it was one well fitted for the experiment which I had proposed with the nitric acid injection.

For this purpose I procured the catheter which I now show you. It is made of the purest gold which can be worked. It has two channels, which are separated from each other by a longitudinal septum running the whole length of the instrument. Each channel terminates by a distinct tube at the handle, and has a separate eye, or opening, at the other end of the catheter. By means of this instrument, you will observe that a liquid may be injected into the bladder, entering it by one passage, and flowing out of it by the other, so that there may be a current through the bladder, without that organ being inconveniently distended. I had contrived a complicated apparatus for the purpose of making the injection; but I was afterwards led to prefer the simpler contrivance of an elastic gum bottle, having a stopcock, and an elastic gum tube attached to it. At first I washed out the bladder with some distilled water, to get rid of the mucus which was lodged in it. Then I injected the solution of nitric acid very slowly, using the same liquid over and over again several times. After the operation was performed, the liquid which had been employed as an injection was tested by the addition of a *highly concentrated* solution of pure ammonia; and it was always found, that, if the ammonia was added in a sufficient, but not too large a quantity, the phosphates were precipitated in abundance. The patient suffered no material inconvenience from this operation. It was continued sometimes for fifteen minutes, sometimes for half an hour, and repeated, according to circumstances, once in two, or three, or four days. At last, in making water, the patient voided these two small calculi, composed of the phosphate of lime, with a small proportion of the triple phosphate. It was impossible to doubt that they had been acted on, and partly dissolved, by the acid injection, and that they had at last, come away by the urethra, in consequence of their having been thus reduced in size. For some time after this occurred, the patient was in a state of comparative ease. He had still symptoms of stricture of the urethra and diseased bladder, but he was free from the more urgent symptoms under which he had labored formerly. By degrees, however, these symptoms began to recur; and I have no doubt that there was a fresh formation of calculi, produced chiefly, as was the case with the former ones, by the diseased state of the bladder. If he had remained in London, I should probably have been able to have given him some further relief, by repeating and continuing the use of the injection. But he went into the country, where, having been for a long time in a very bad state of general health, he at last died, as I was informed, of some disease not immediately connected with that on account of which I had been consulted.

Since the occurrence of this case, I have, from time to time, as opportunities presented themselves, endeavored to follow up the investigation; and I have contrived a more complete apparatus for the



purpose of making the injection. From the experiments which I have made, I feel justified in drawing the following conclusions:—

1. That a calculus, composed externally of the phosphates, may be acted on by this injection so as to become gradually reduced in size, while it is still in the bladder of a living person.

2. That there is reason to believe that small calculi, composed throughout of the mixed phosphates, such as are met with in some cases of diseased prostate gland and bladder, are capable of being entirely dissolved under this mode of treatment, and that it is probable that it may therefore be applied with advantage to some of these cases, in which, from the contracted state of the bladder, or from other circumstances, the extraction of such calculi by means of the urethra-forceps cannot be accomplished.

---

## LECTURE XIII.

### *Operation of Lithotomy.*

I PROCEED to describe the method of extracting a calculus by means of an incision of the bladder. This is what is commonly called the operation of lithotomy. I shall draw your attention to the operation on the male sex first, and afterwards to that on the female.

You may make an opening into the bladder at its fundus; and this is what is meant when we speak of the high operation. You may also make the opening at the neck of the bladder. The experience of the great majority of surgeons, from the time of lithotomy having been first practiced to the present day, is in favor of the latter method of operating; but as to the exact mode of making the incision at the neck of the bladder, there has been, and still is, a considerable variety of opinion. I shall explain to you what I am led to believe to be the most eligible method of performing the operation; endeavoring to establish, at the same time, the principles on which it is to be conducted; the observance of which will enable you to do all that human means can do towards the safety of your patient.

In order that the object of the operation may be clearly understood by those, who have not yet studied the subject, I am accustomed to explain it in the following manner:—

A small calculus may be voided by the urethra, without an operation of any kind. A larger calculus is prevented coming away, because the urethra is too small to receive it. The obvious remedy for this is to dilate the urethra, to make it wider; and if it cannot be sufficiently dilated by the bougie, it must be dilated by the knife. But it is unnecessary to divide the urethra for this purpose through its whole extent. It is much easier to cut down on the urethra where it lies in the perineum, and dilate the posterior portion of it (which includes

what is called the membranous part, and also that which lies imbedded in the prostate gland). The stone may then be extracted through the wound in the perineum, the greater part of the urethra remaining untouched and un hurt.

In performing this operation there are some things to be especially kept in view.

1st, The external incisions are to be made in such a manner as that there may be a sufficient space for the easy extraction of the calculus. Such a space does not exist between the two rami of the pubes, in the upper part of the perineum. Neither will it be obtained by an incision made in a vertical direction, in the line of the raphe of the perineum, unless, indeed, it be carried so low down as to divide the anus and a portion of the rectum. But if the incision be made obliquely, beginning at the raphe of the perineum, and extending laterally between the anus and the tuberosity of ischium, there will be room, as far as the external parts are concerned, for the extraction of a very large calculus. Such an incision will manifestly answer the intended purpose, at the same time that it is not liable to the objections which may be urged against the incision made in the course of the raphe, and extending into the rectum.

2dly, The incisions are to be made so as to avoid any considerable and dangerous hæmorrhage. It is idle to say that the occurrence of such a hæmorrhage is a hypothetical evil. Even in a young person, with a small mass of substance in the perineum, there are vessels which may bleed much if divided. But the operation is frequently performed on persons advanced in life who have a deep perineum, that is, in whom a large quantity of soft parts must be divided before the knife can reach the bladder. The vessels of the perineum are in them large in proportion; and an incision made with the utmost care will sometimes divide vessels which will bleed profusely. On this account, the incisions should not be more extensive than is really necessary; especially in the deep parts of the perineum, where the bleeding vessels are not so readily to be discovered, nor so easily commanded, as they are near the surface. With the same view, the incisions should be low down in the perineum, so that there may be as little risk as possible of wounding the artery of the bulb of the urethra; at the same time that care is taken not to carry them close to the ischium, where the trunk of the internal pudic artery is situated, and where its branches are, of course, of a larger size than at a greater distance from their origin.

3dly, It is, on other accounts, of great consequence, that there should be no large incision of the neck of the bladder. The prostate gland is of a firm, dense structure; and when it is divided, the urine passes over the cut surface, without there being any danger of its penetrating into its substance, or into the neighboring textures. But on the outside of the prostate, and neck of the bladder, is loose cellular membrane, which, if the urine has access to it, may become infiltrated with it to a very great extent; and which, thus infiltrated, is likely to be rendered the seat of extensive inflammation, sloughing,



and abscesses. It is important, therefore, that we should avoid carrying the incision beyond the boundaries of the prostate into this loose cellular membrane. It is true, that, if the stone, which is to be extracted, be beyond a certain magnitude, this cannot be avoided; but it may be avoided otherwise. Not only a small stone, but one considerably above the average size, may be taken out of the bladder, through a wound which does not extend beyond the limits which I have mentioned; and in many instances where, from the size of the stone, this cannot be accomplished by means of an incision confined to one side of the prostate, the object may be attained by making a double section, and dividing the prostate on both sides.

The dangers attendant on an extensive wound of the neck of the bladder, penetrating beyond the margin of the prostate, are not merely theoretical. As long ago as the year 1810, the case which I am about to mention first opened my eyes to the ill consequences arising from a communication being made between the cavity of the bladder and the loose cellular membrane in which it is enveloped. I was present at the operation of lithotomy, performed by a very experienced and skilful surgeon. There seemed to be no difficulty in its performance, and the forceps was introduced only once into the bladder; but the bladder (as I suppose) was in a contracted state, and the surgeon, in opening the forceps, observed a resistance, which suddenly gave way, as if a ligature had been broken. In the evening the patient was apparently well; but during the night he had no sleep, and he complained exceedingly of hunger. On the following day, towards the afternoon, his abdomen became a good deal distended, and the pulse rose to 150 in a minute. He was low and desponding; his hands were cold, and his respiration frequent. During the following night, (the second from the operation) these symptoms became aggravated. He had still no sleep; the pulse was more rapid and feeble; and on the following morning he died.

It fell to my lot to examine the body after death. In doing so I found that the mucous membrane and muscular tunic of the bladder had been ruptured for about the extent of three quarters of an inch. The rupture was situated on the left side, just anteriorly to the rectum, and it, of course, extended into the cellular membrane on the outside of the bladder. The cellular membrane in the neighborhood of the rupture, and for some distance upwards in the course of the ureter, had the appearance of being infiltrated with urine; it was inflamed and sloughy; and at the lower part, close to the bladder, its cells were occupied by a small quantity of pus.

In the year 1816, I met with the following case, which confirmed the suspicions which the preceding case had excited in my mind:—A little boy, about a year old, was admitted into the hospital, laboring under stone in the bladder. I performed the operation for its extraction, making the incision of the prostate with a common scalpel. Having introduced my finger into the bladder, I felt a very large stone, and at the same time found that I had made a very small incision. On this I introduced a probe-pointed bistoury, and dilated

the wound, as I thought, sufficiently for the easy extraction of the stone. On the following day the pulse was rapid: the patient was low and depressed; and from this time he continued to sink, until he died on the third day after the operation. On dissection, I found that the wound at the neck of the bladder had extended beyond the boundaries of the prostate gland. The cellular membrane in the neighborhood had all the appearance of having been infiltrated with urine. It was in part inflamed, and in part in a state of slough, being converted into a substance resembling wet tow. There was nothing else to account for the patient's death.

Some time after the occurrence of this last case, I had the opportunity of perusing Scarpa's Memoir on the Cutting Gorget, and was gratified to find that the views which I had been led to form corresponded to those of this distinguished surgeon. That these views are correct, I cannot at this moment entertain the smallest doubt. They are supported by other cases which have fallen under my observation, in which the patient manifestly died from inflammation and sloughing of the loose cellular membrane surrounding the prostate and neck of the bladder. If any one who has had much experience in lithotomy will look back at the cases which he has met with, in which patients have died after the operation, he will, if am not much mistaken, find that what I have just mentioned will explain many things which would be otherwise inexplicable; in particular, he will find an easy solution of the great danger which attends the extraction of very large calculi. He will also be enabled to comprehend wherefore it is that patients, on whom the operation is performed with the greatest apparent dexterity and ease, and in the shortest possible space of time, sometimes die in the course of two or three days after the operation; while others, in whom the stone appears to have been extracted with difficulty, recover without any unfavorable symptoms.

I proceed next to explain to you in detail the various steps of the operation. The first, as I have already stated, is the making an incision into the urethra, where it lies in the perineum; the second is the dilating, or dividing that canal where it is surrounded by the prostate. To facilitate the accomplishment of these objects, it is convenient to begin with introducing into the urethra this solid steel instrument, which we call a staff. It is of the figure of a sound; from which, however, it differs; first, in the handle, which, instead of being smooth and polished, is made rough, in order that it may be more firmly and steadily held; secondly, in having a groove, like that of a director, on its convex side. It is, in fact, a director, and intended to answer precisely the same purpose. The staffs sold by the instrument-makers are generally of too small a size. They should be as large as the urethra will easily admit without being painfully stretched. A large staff is more easily felt in the perineum than a small one, and it admits, of course, of a deeper and wider groove. The groove ought to become gradually shallower just before it terminates at the extremity of the instrument, in order that the point may be neatly rounded off. The edges of the groove ought to be carefully rounded



off also. Attention to these circumstances in the construction of the staff, renders its introduction more easy. I generally begin the operation with introducing the staff into the bladder, merely because it is, on the whole, more readily managed when the patient is standing erect, than after he is placed on the table.

The next thing is to secure the patient in a proper posture, with the perineum exposed. About two feet six inches is a convenient height for the table. The patient should be placed on it, lying on his back, supported by pillows, with his shoulders somewhat elevated. He should be directed to grasp the outside of each foot with the hand of the same side; and then the hand and foot are to be bound together by several turns of these bandages, which we call lithotomy garters. If the patient be corpulent, he probably will not be able to grasp his feet, and he must in that case grasp his ankles instead. Besides the lithotomy garters, it is convenient to apply another bandage—the neck strap,—which is thrown over the back of the neck, and passed under each ham. These bandages are not employed with a view to prevent the patient struggling, as persons out of the profession generally suppose, but solely for the purpose already mentioned, namely, to keep him in a convenient posture, with the perineum properly exposed. Thus prepared, the patient is drawn towards the end of the table, with the buttocks rather projecting over it.

Several assistants are required, one to support the patient on each side, holding his feet, hands, and knees, and keeping the lower limbs well asunder; a third to give you the instruments, in the order in which you want them; and a fourth to hold the handle of the staff. It is also convenient, though by no means necessary, to have another assistant, to support the patient's shoulders. Your assistant, who holds the staff, may stand on either side, but it is usual for him to stand on the patient's left side, in order that he may take the handle of the staff in his right hand.

The surgeon himself should be seated on a stool before the patient. He is first to attend to the position of the staff, taking care that it is held nearly perpendicularly; the handle of it being, however, a little inclined towards the patient's right groin. This causes the convexity of the instrument to project slightly on the left side of the perineum.

In the first part of the operation your attention is to be directed to the staff. You are to feel it with your left hand, and the knife, held in your right hand is to be directed towards it. It is a sure guide; following which you can never err, even in the deepest perineum. On the other hand, if you lose sight of it, you are cutting in the perineum as it were at random; you divide parts which you ought not to divide; especially you are in danger of carrying your incisions too near the ramus of the ischium, where the arterial branches of the internal pudic artery are of a larger size than in the centre of the perineum, and therefore more liable to bleed. I have seen some surgeons endeavor to introduce the point of the double-edged scalpel into the groove of the staff at the first incision. But I caution you against this, as a great error in the operation; except, indeed, it be in

the case of a young and very lean subject. Where there is any quantity of fat in the perineum, or any thing even distantly approaching to what we call a deep perineum, if you attempt to cut at once into the groove of the staff, the result is, that you open the urethra too far forwards; you divide the *corpus spongiosum* of the penis, which need not in reality be divided at all: and you are then certain of wounding the artery of the bulb of the urethra, which otherwise is, in most instances, avoided. Another inconvenience which attends on this method of proceeding is, that the wound being too near to the scrotum, the cellular membrane of it is in danger of being infiltrated with blood, and another still is, that a greater mass of substance is left to be divided, when you continue the incision into the bladder, than there would have been if you had cut into the urethra farther back in the first instance.

I say, then, let the opening in the urethra be made deep in the perineum, behind the bulb, and as near as can be to the prostate. Place the thumb of your left hand on the skin over the staff; and, in a man of ordinary size, about an inch and a quarter before the anus. Begin your incision immediately below this, on the left side of the raphe, and continue it backwards and towards the left side, into the space between the anus and the tuberosity of the left ischium. Here you may cut freely; you can injure nothing of consequence. Then feel for the staff in the wound; direct the point of your knife towards it, and carefully cut into the groove, where it lies in the membranous part of the urethra. All these incisions are, you will observe, made low down the perineum, that is, near to the rectum. I have already given you what I conceive to be sufficient reasons for avoiding incisions in the upper part of the perineum. I may add another, namely, that if the external part of the wound be in the lower part of the perineum, there is a depending orifice for the free discharge of the urine after the operation, which there would not be otherwise. There is also a great authority in favor of this mode of proceeding. Cheselden made his incisions in the way which I have mentioned, as is proved by the anxiety which he evinced to avoid injuring the rectum. Had he done otherwise, it would never have entered into his contemplation that the rectum was in danger.

The next step of the operation is the continuance of the incision along the posterior part of the urethra, and the dilatation of the neck of the bladder. Some recommend this to be accomplished by means of the common scalpel, with which you have made the external incisions, the point being steadily introduced along the groove of the staff, with the edge turned outwards, so as to divide the left side of the prostate. This was Cheselden's method of operating. I draw this conclusion from Cheselden's own account of his operation, not from the absurd statement published by his contemporary, Dr. Douglas, who evidently understood nothing of the matter, and, indeed, describes an operation which it is next to impossible to perform. But after having incised the prostate and neck of the bladder, Cheselden introduced the instrument which I now show you, the blunt gorget, so as



to dilate the wound still further, answering at the same time the purpose of a conductor for the forceps; and, as far as I can learn, this method was followed generally by the English surgeons up to the time of Sir Cæsar Hawkins. This celebrated operator, who exercised his skill, and acquired his reputation, within the walls of our hospital, caused one side of the gorget to be ground to a sharp edge, and thus converted the blunt into a cutting gorget. The cutting gorget of Sir Cæsar Hawkins (and all that have been since invented are but modifications of it) was intended to supersede the use of the knife in opening the neck of the bladder, at the same time that it answered the purpose of a blunt gorget in other respects. It would be presumptuous in me to say that the cutting gorget is not a good instrument, when it has been employed, not only by many of our more distinguished, but by some of our most successful lithotomists. Nevertheless, I cannot but think there are some considerable objections to it. The incision is made as it is being thrust into the bladder. In consequence of the thick wedge-like form of the instrument, the prostate, and especially a hard and enlarged prostate, offers to it considerable resistance. A certain quantity of force is necessary for its introduction; and if that force be not well applied, the beak may slip out of the groove of the staff into the space between the bladder and rectum,—an accident which is too surely followed by the death of the patient. Now I know that such an accident ought not to happen; but I also know that I have seen it happen to a very experienced and dexterous lithotomist. There is, of course, a still greater chance of its happening to an inexperienced lithotomist (and all are inexperienced in the first instance). These considerations lead me to recommend you not to begin with the cutting gorget: you may adopt it, if you please, afterwards. For my own part, although I have very frequently used the cutting gorget, I generally make the incision of the prostate with the knife which I now show you. You will observe that the blade is broad enough to divide a considerable portion of the prostate, as it enters the bladder, without its being necessary to increase the size of the incision by cutting laterally afterwards; and that, instead of a sharp point, it terminates in a beak, fitted to the groove of the staff. In ordinary cases, a knife of this kind, with a single cutting edge, is sufficient; but in cases of very large calculi, there are good reasons for dividing both sides of the prostate. There is no objection to this being done, that I can discover; and for such cases I have been for some time in the habit of using this double-edged knife, with a beak projecting from its centre.

Having made the opening into the membranous part of the urethra, you are to insert the beak of the beaked knife into the groove of the staff. You then take the handle of the staff into the left hand, depressing it at the same time. You depress your right hand also, so that the handle of the knife, which you hold in it, lies in the lower part of the external wound. You are now to push the knife along the groove of the staff into the bladder, with its cutting edge inclined outwards and a little downwards, towards the ramus of the ischium, if

you use a single-edged knife; but holding it horizontally, if you use one with a double edge. Let this be done slowly, cautiously, taking care that you do not lose the feeling of the beak sliding over the smooth surface of the staff for a single instant. Generally, as the knife enters the bladder, a few drops of urine escape, but never any large quantity. This being accomplished, you are to withdraw the knife along the groove of the staff in the same line in which you introduced it. Never cut with it laterally, except you find it afterwards absolutely necessary to do so, on account of the large size of the stone; for in cutting laterally, you will find it difficult to measure exactly the extent of your incision; and you may endanger your patient's life in consequence of your dividing the parts beyond the boundaries of the prostate.

The next step of the operation is to introduce your finger, directed by the staff, into the bladder, so that you may feel the parts which are divided, and determine whether the incision is properly made. If you operate on a child, or on a young and thin person, you may then at once introduce the forceps into the bladder. But if you operate on a full-grown person, and especially on one having a deep perineum, it will be prudent for you first to introduce this instrument, which we call a blunt gorget, previously to the use of the forceps. The blunt gorget is, as you perceive, an oblong plate of steel, turned up at the edges, so as to present a concave surface above, and a convex surface below. The handle is inclined downwards; and that extremity, which is opposite to the handle, gradually becomes narrower, and terminates in a beak similar to that of the lithotomy knife. The surgeon takes the blunt gorget in his right hand, and inserts the beak in the groove of the staff; then, holding the handle of the staff in his left hand, and depressing it at the same time, he carefully introduces the gorget into the bladder. Having done so, he withdraws the staff, and leaves the gorget in the wound.

The gorget is intended to answer the purpose of a director for the forceps. But it answers another purpose also; it is a dilator of the wound. The knife divides only a portion of the prostate. The gorget splits the remainder as far as its breadth allows it to do so. Do not for an instant suppose that this is any rude or violent proceeding. It is far otherwise. The incision of the prostate having been begun by the knife, the extension of it by means of the blunt gorget is accomplished with the greatest ease. If you perform the operation on the dead body in the way which I have described, and dissect the parts afterwards, you will distinguish very readily the clean smooth surface made by the cut of the knife, from the fibrous or striated surface, made by the splitting of the gorget. You will ask, Why not make such a division of the parts by cutting laterally with the knife? Why prefer the dilatation of the wound by the blunt gorget? My answer is, that the separation of the parts with the latter instrument causes no hæmorrhage; and that it ceases as soon as it reaches the margin of the prostate; that is, as soon as it reaches the condensed cellular membrane, which forms what may be called its capsule.



Before explaining the use of the lithotomy-forceps, I must show you its construction. One of the handles terminates in a ring, the other in a loop. The blades become broader towards the extremity; and their opposite surfaces are concave, and armed with small pointed projections, or teeth. When closed as far as they can be closed, the ends do not exactly come in contact. Thus they are well fitted to hold the stone, which they have seized, at the same time that, if the stone be not seized, it is impossible for them to pinch the mucous membrane of the bladder. This particular forceps is made according to the pattern of that which Cheselden employed on most occasions as described by Douglas, and you will find it very generally useful. You must not, however, rely on this alone: you must have forceps which are longer and larger: others much smaller, especially for operations on children. You should be provided, also, with curved forceps, to be used where the stone lies in the hollow behind an enlarged prostate gland.

The surgeon, then, holding the handle of the blunt gorget with the left hand, introduces the forceps with his right, along the concave surface of the gorget, into the bladder. This is to be done cautiously, and without violence. But it is to be observed, nevertheless, that the forceps will always experience a certain degree of resistance, and that some force is necessary to make them enter the bladder. You know when they have entered by the resistance ceasing, and, in many cases, by a gush of urine taking place at the time. In a deep perineum the forceps will have to penetrate to a great depth before reaching the bladder. This is one of the sources of difficulty and doubt to a young surgeon, who is apt to think that the forceps must have actually entered the bladder, when it has, in reality, penetrated no farther than the prostate. The forceps having been introduced, the gorget is to be withdrawn.

The surgeon is not to open and close the forceps at random. He is to use it at first as a sound, exploring the different parts of the bladder, until he has ascertained where the stone lies. The discovery of the stone will be very much facilitated by the introduction of the finger along the groove of the staff, previously to the introduction of the blunt gorget; at least in most instances. In a case of enlarged prostate and deep perineum, where the finger will not reach the bladder, this mode of examination is, of course, of no avail. The stone being touched by the forceps, the blades are to be opened upon it, and the stone is, in general, readily grasped. I have already mentioned a case in which the muscular coat of the bladder was ruptured in consequence of the surgeon too forcibly and hastily opening the forceps; and this will be a lesson to you as to your conduct in this part of the operation. But I conceive that the danger of such an accident as this is not the same in all cases. In some instances, when you begin the operation, the bladder is distended with urine; then, when the instruments enter it, the urine rushes out, not impelled by muscular action, but by its own gravity, and the pressure of the viscera. Under these circumstances, when you introduce your

finger into the bladder, you find the muscular tunic relaxed, with the mucous membrane hanging in folds; and, in consequence, they are not likely to be ruptured. In other instances, the patient voids his urine immediately before the operation, or, perhaps, during the introduction of the staff. Here, the urine, having been made to flow by the patient's own efforts, the muscular tunic is contracted: it offers a considerable resistance to the opening of the forceps, and is liable to be ruptured, if the blades are opened rudely and incautiously. It sometimes happens that a small stone lies, as it were, concealed in some part of the bladder, perhaps beneath a fold of the mucous membrane, so that you cannot easily bring the forceps in contact with it. You will then frequently succeed in seizing it in the following manner:—Expand the forceps gently and carefully, until the blades are widely separated from each other, holding them at the same time in such a position as that the blades open horizontally.

This dislodges the stone, and causes it to fall to the lower surface of the bladder; and then, as you close the forceps, you find that you have seized it. In other cases, where there is a tumor at the neck of the bladder, caused by an enlargement of the prostate gland, the stone is liable to be lodged behind the projection. You feel the stone; but the forceps slide over its surface, and does not grasp it. It is in such a case as this that the curved forceps is useful, being capable of dipping into the hollow behind the prostate. Under these circumstances, you may also find it useful to introduce the finger into the rectum, and raise the bladder, by the means of it, towards the pubes. It is evident, however, that this expedient can be of no use, except where the bladder is within reach of the finger, which it rarely is in a case of enlarged prostate.

The next thing to be done is the extraction of the stone with the forceps; and, simple as it may appear to be, there are several things to be attended to in this part of the operation.

The forceps is to be withdrawn from the bladder in the direction of the external wound. For the most part, it is better that the convexity of one blade of the forceps should be turned upwards, and that of the other blade downwards. Attention to this point is especially of consequence, in cases where there is an enlarged prostate gland, forming a tumor projecting into the bladder. The smooth convex surface of the blade of the forceps is not interfered with by the projection; whereas, if the forceps be turned in the other direction, the stone, coming in contact with the tumor, becomes as it were entangled by it, and the extraction of it is rendered difficult. The stone must be grasped with a certain degree of force, otherwise it may escape from the forceps. But, on the other hand, it is important that you should not, in ordinary cases, apply so much force as to crush it, for this will make the operation not only more difficult, and tedious, and painful, but also more dangerous. You should always endeavor to determine, before you proceed to the operation, what is the probable nature of the stone, in order that you may judge how far it is, or is not, likely to be easily broken. The lithic acid calculus is of a very



hard texture, and is broken with difficulty. The oxalate of lime calculus is also hard, but it is more brittle than the lithic acid calculus. If the urine be alkaline, without containing the adhesive mucous secreted by the bladder, you know that the external layer is composed of the triple phosphate, and a calculus of this kind is much more easily broken than either of those which have been before mentioned. But the most brittle of all, and that which requires the greatest degree of caution in its extraction, is the fusible calculus, formed partly by the triple phosphate of the urine, and partly by the phosphate of lime generated by the adhesive mucus secreted by the membrane of the bladder; and the greater the quantity of the adhesive mucus, and the larger the proportion of the phosphate of lime, the more liable is the calculus to be crushed beneath the pressure of the forceps.

If, having seized the stone, you find that it cannot be readily drawn through the neck of the bladder, you are to bear in mind, that this may be because you have hold of its long diameter. Let it then drop out of the forceps, and endeavor to seize it in a more convenient manner. In some cases you will find it expedient to dilate the wound of the prostate by a second incision. This, however, is never proper, except where you have divided only one side on the prostate in the first instance. You may then introduce a straight probe-pointed bistoury, and make an incision in the opposite or undivided side of the prostate. But this is to be done with the greatest caution. A careless incision may occasion a frightful hæmorrhage, or it may extend beyond the boundaries of the prostate into the cellular texture external to it; and I have already explained to you how much this may endanger the life of the patient.

It is scarcely possible for me to say too much as to the caution necessary in the extraction of a large calculus. You must command not only all your skill, but all your patience; indeed, patience is here the greatest indication of skill. You are to draw it out gradually, endeavoring to dilate the parts through which it is to pass, instead of tearing them; and it is astonishing to what an extent this gradual dilatation may be accomplished, in the hands of a prudent surgeon. I have told you how important it is that you should avoid crushing the stone. But even this rule has its exceptions. A stone may be so large that no degree of gentleness and caution will enable you to extract it entire without extensive laceration of the neck of the bladder, extending into the surrounding cellular membrane; and, under these circumstances, it is the smallest of the two evils that it should be broken into pieces. The fragments are to be extracted one after another, larger or smaller forceps being used, according to circumstances. Some of the smaller fragments may be removed by means of this instrument, a kind of steel spoon, to which we gave the name of scoop; and the very smallest of all may be washed out of the bladder by introducing the pipe of a syringe into it, and injecting into it, a sufficient quantity of tepid water. You are to ascertain, at last, whether the whole of the fragments are extracted, by exploring the cavity of

the bladder carefully, by means of this straight sound introduced by the wound, and, in most cases, also, by examining it with the finger.

When a fusible calculus, containing a large proportion of the phosphate of lime, is broken, it often happens that some of the fragments are of so small a size that they remain like particles of coarse sand in the bladder, even in spite of all the precautions which you can take at the time of the operation, and further attentions are required. Let the patient recover of the first effects of the operation: then once or twice daily introduce a catheter by the urethra into the bladder, and inject half a pint of tepid water, or of a weak infusion of linseed, through it, by means of an elastic gum bottle. The liquid flowing in by the catheter will flow out by the wound, carrying the particles of sand with it; and thus, at last, the bladder will be emptied of them. In a case of enlarged prostate, indeed, this plan may not answer; as frequently the patient is not more able after the operation to empty the bladder by the wound, than he was before to empty it by the natural passage. For these cases you must be provided with a large catheter, having an aperture three or four times the size of that commonly made, close to the point, on the upper or concave side. The liquid being injected by the catheter, will be discharged by it also, carrying every time some of the small fragments of calculi with it, until none are left in the bladder.

It very rarely happens that you meet with an encysted calculus where you perform the operation of lithotomy. In fact, in the great majority of cases of encysted calculi, the bladder is diseased; so that they are quite unfit for an operation. However such an event occurs occasionally. A boy, about sixteen years of age, was admitted into the hospital in the year 1816. He had suffered a long time from stone in the bladder. There were these remarkable circumstances in this case; namely, that the stone could sometimes be felt distinctly with the sound, appearing to be of a large size, while at other times it could not be felt at all; and that, sometimes, when the bladder was empty of urine, it could be perceived distinctly with the finger from the rectum, while at other times, when there was urine in the bladder, it could not be detected at all by this mode of examination. In performing the operation, when I had introduced my finger into the bladder, I could, at first, discover no stone. At last I felt it on the anterior part of the bladder, behind the pubes. It was not lying loose in the cavity of the bladder, but evidently contained in a cyst, communicating with the bladder by a round opening. By means of a probe pointed bistoury, I carefully dilated the orifice of the cyst, and then, introducing my finger, separated the membrane of it from the calculus, until I was enabled to take hold of the stone with the forceps. The calculus is preserved among those in our museum. It was not only encysted, but adhering also, for it was brought away with a portion of the membranous lining of the cyst closely attached to it. The boy recovered.

After the operation your patient is to return to his bed, where he is to be laid on his back, with his shoulders and loins as much elevat-



ed as they can be without inconvenience, so as to make the wound in the perineum as depending as possible. The thighs are to be somewhat elevated by a bolster placed under the hams, and the knees are to be a little asunder. The urine flows, not through the urethra, but through the wound; and the first two or three succeeding gushes of it usually give the patient a good deal of smarting pain. In many cases, where there has been a deep perineum, and especially where the calculus has proved to be of a large size, I have introduced an elastic gum canula through the wound into the bladder, and allowed it to remain for the first two or three days; that is, until there was time for the surrounding parts to become consolidated by inflammation. Such a canula makes an excellent conductor for the urine. It keeps the bladder always empty, and prevents the pain which otherwise is experienced on the first passage of the urine. It prevents also that obstruction to the flow of the urine which sometimes occurs after the operation, in consequence of the wound having become plugged by a coagulum of blood. In cases in which the calculus has been of so large a size as to make it probable that, in the extraction of it, the soft parts have been lacerated beyond the boundaries of the prostate, the canula will answer another good purpose by lessening the danger of the urine becoming effused into the cellular membrane.

In ordinary cases the after-treatment is very simple. The wound requires little more than attention to cleanliness; for of what service can applications be to a wound, over which the urine constantly flows? It gradually contracts and granulates; and as it does so, the urine begins to flow by the urethra. As the wound becomes more contracted, more urine flows by the natural passage; and usually, in less than a month from the time of the operation, the function of the urethra is completely restored, and the wound is healed.

In a few cases there may be reason for applying leeches to the lower part of the abdomen, and in still fewer it may be right to take blood from the arm. Fomentations applied to the abdomen are sometimes proper also; and to this we may add the precautions necessary after most other operations with respect to the functions of the intestines, and the diet.

There are cases, however, in which still further attentions are required. Where the bladder is in a state of chronic inflammation is always aggravated by the necessary introduction of instruments at the time of the operation, and there is always an increased secretion of the adhesive mucus afterwards. Again, in some cases, where those symptoms did not exist previously, they are induced by the operation. Now, under these circumstances, the mucus being liable to deposit the phosphate of lime, and the whole of the urine being rendered alkaline, there is a great liability to a calculous formation, and it will often require much care to prevent this calamity coming a second time upon the patient. Opium, mineral or vegetable acids, and especially the decoction of the *pariera brava*, may be here resorted to with advantage. But I need not occupy your time by a detail of the treatment which is proper under these circumstances; it is sufficient

for me to refer you to what I said on this subject in the first of my Lectures on Calculous Disorders. In some of these cases, the whole of the wound becomes encrusted with a white calculous deposit. Stimulating applications to the surface of it are then likely to be useful; such as a lotion of a decoction of bark and tincture of myrrh, solution of the nitrate of silver, or of nitric acid. As by other means the urine is brought into a more healthy condition, these lotions promote the separation of the concretion from the surface of the wound, which then gets into a state to granulate and heal.

---

## LECTURE XIV.

### *On the Causes of Death after Lithotomy.*

It is much more agreeable to contemplate the cases in which our art is successful, than those in which it fails: but the study of the latter is not less instructive than that of the former; and I should be guilty of a serious omission if I were to dismiss the subject of lithotomy without endeavoring to explain the circumstances which render the operation hazardous; under which it is likely to shorten the patient's life, instead of leading to his cure.

I have already pointed out what I conceive to be the bad consequences of a too free division of the prostate gland. All that I have been able to observe for many years past has confirmed me in the opinion, that *an incision of the prostate, extending into the loose cellular texture surrounding the neck of the bladder, is replete with danger to the patient.* Such a division of parts is never necessary where the calculus is of moderate dimensions; but it cannot be avoided where it is of a very large size; and hence the extraction of stones of this description can never be accomplished without a great probability of the patient not surviving the operation.

The symptoms which arise in these cases are not well marked in the first instance. There is some heat of skin, and generally an absence of perspiration; there is usually an abundant flow of urine through the wound; the pulse, as to frequency, is somewhat above the natural standard; and the patient, although free from suffering, has no disposition to sleep. This state of things continues for twenty-four, or even for forty-eight, hours after the operation; then the more characteristic and alarming symptoms show themselves. The pulse becomes more frequent, rising to 90, 100, and at last to 140, in a minute; the heat of skin becomes still greater; the tongue dry; the countenance anxious. Afterwards, as you count the pulse, you find every now and then a beat weaker than the rest; and then there are complete intermissions. At first the intermissions are not more than one or two in a minute; by degrees they become more frequent,



until they occur every third or fourth beat. There is an occasional hiccough; the patient complains of some degree of tenderness in the lower part of the abdomen, especially in the left groin; the belly becomes tympanitic, that is, the stomach and intestines are filled with air; the distention of the belly increases; the hiccoughs are more frequent; the pulse, continuing to intermit, becomes weak and fluttering. In some instances, the patient retains his understanding even to the last; while in others he falls into a state of low delirium previous to death. Occasionally, in the progress of such a case, the patient has a severe rigor, and sometimes he complains of a pain in the loins. Where these symptoms begin at an early period, he may die within forty-eight hours from the time of the operation; but in other cases, death may not take place for four or five days, or even for a week. On dissection, you find the cellular membrane round the neck of the bladder, and between the prostate and the rectum, bearing marks of inflammation, infiltrated with lymph and serum; and, to a greater or less extent, converted into a slough. If death has taken place at an early period, the intestines are found distended with air, and there is a very slight effusion of serum in that part of the peritonæum, which descends into the pelvis. But if the patient has labored under these symptoms for many days before he dies, the peritonæum, where it is reflected from the bladder to the rectum, is seen of a darker color than natural, and encrusted with lymph; and at a still later period there is the appearance of inflammation, to a greater or less extent, throughout the peritonæum generally. But the peritonæal inflammation is evidently not the primary disease: it is the inflammation and sloughing of the cellular membrane of the pelvis which has induced inflammation of the adjoining portion of that membrane. Something also is to be attributed to the tympanitic distension of the intestines, which if continued for a considerable time, is always liable to be attended with tenderness of the abdomen, and some degree of peritonæal inflammation.

It is important that you should not fall into the error of regarding such cases as I have just described as cases of simple peritonæal inflammation; for the remedies which would be useful in the latter case are injurious here. The abstraction of blood, or even the operation of an active purgative, will cause the patient to sink more rapidly, tending only to hasten his death. The proper system to be pursued is the opposite to that of depletion. The patient should take such nutriment as his stomach is capable of digesting. The bowels may be kept open by injections, or by the exhibition of some very gentle purgative; and ammonia, wine, and brandy are to be administered, when the state of the general system indicates that stimulants are necessary.

Under this kind of treatment I have certainly known two children to recover, who were effected in the manner which I have described. In one of the cases to which I allude, an abscess formed in the neighborhood of the neck of the bladder, which burst into the wound, and then the symptoms subsided. In the other a slough separated into

the rectum, and a fistulous communication remained afterwards between that bowel and the neck of the bladder; but it was of a small size, and productive of no serious inconvenience. In adults the chance of recovery is, at any rate, much smaller than in children. Can anything be done for their assistance in the way of local treatment? Let us consider how it is that the dangerous symptoms arise. There is suppuration and sloughing of the cellular membrane round the neck of the bladder, and the constitution is disturbed, as it is in a case of carbuncle; or, what is still more analogous, as it is in those cases in which there is sloughing of the cellular membrane of the scrotum, in consequence of the effusion of urine arising from the rupture of the urethra behind a stricture. And, in these cases, what is the practice recommended? Do we not divide the soft parts freely over the sloughing cellular membrane; and is not this operation productive of the most signal benefit? Is it possible to resort to any practice corresponding to this, in the cases now under our consideration? There is only one way in which this can be accomplished, namely, by laying the sloughing abscess open into the rectum. I made this experiment in one instance, and I will tell you the result. In September, 1825, I operated on a patient, a man between fifty and sixty years of age, laboring under stone in the bladder, in St. George's Hospital. The calculus was extracted without the smallest difficulty. But I performed the operation with what is called Mr. Blizard's lithotomy knife. This is a long, narrow, straight, probe-pointed bistoury, and you must cut with it laterally, in order that you may divide the prostate, so that it is difficult to determine the exact extent of the incision. Immediately after the operation, I had some misgivings, and was led to fear that I had made the incision to such an extent as to penetrate beyond the boundaries of the prostate. At first, indeed, the patient seemed to be going on as well as possible; but, in about forty-eight hours from the time of the operation, some unfavorable symptoms began to show themselves. On the third day the countenance had become anxious, the skin was hot, and the pulse occasionally intermitted. On the following day (the fourth) the pulse intermitted once in fifteen beats; the skin was hot and dry, and the abdomen began to be tense and swollen. I could not doubt that those symptoms existed which I had known to be the precursors of death in some other cases. Under these circumstances, with the concurrence of my colleagues, I performed the operation which I am about to describe. I introduced the forefinger of the left hand into the rectum. I then passed a probe-pointed curved bistoury into the wound, and quite to its farthest extremity on the left side of the neck of the bladder. The probe point having been felt through the tunics of the rectum, I pushed it carefully through them, and, drawing it downwards, divided the lower part of the rectum, sphincter and all. Thus the wound and the rectum were laid into each other. Little or no hæmorrhage followed. The relief was immediate. In five minutes after the operation the intermissions of the pulse had diminished from one in fifteen to one in fifty beats. In an hour it did not intermit at



all. During the two following days the patient appeared quite well; the pulse was regular, between 70 and 80 in a minute. On the next day there was a slight occurrence of the intermissions of the pulse, but it subsided on the exhibition of some brandy and ammonia. After this there was a progressive amendment; the pulse, however, continuing to beat between 80 and 90 in a minute for the two or three following weeks. After about a month, the wound in the rectum began to contract, and the urine to flow by the natural passage; and in another fortnight the patient went into the country, nearly the whole of the urine at this time flowing by the urethra.

I have already informed you that my experience does not justify me in stating, that, after the operation of lithotomy, there is no danger of death from hæmorrhage; and I have mentioned that I had myself the misfortune of losing one patient from this cause. This case, which occurred many years ago, was that of an old man, with an enlarged prostate and an unusually deep perineum. The blood seemed to proceed from the neighborhood of the neck of the bladder, and, what was remarkable, it was venous. I was foiled in all my attempts to restrain the hæmorrhage, and the patient survived the operation only a few hours.

I have known some other cases of death from hæmorrhage, occurring in the practice of other surgeons. It must be acknowledged, however, that such cases are but a very few out of a great number; and that the chance of a patient's bleeding to death, where the incisions are made low down, and are not more extensive than is really necessary, and where proper attention is paid, and proper precautions are used, after the operation, is so small, that it need not enter into your calculations. I speak of attention and precautions after the operation; for, without these, I suspect a dangerous hæmorrhage would occur more frequently than it does. I performed the operation on an old gentleman, and extracted a large calculus. But a still larger stone remained in the bladder, which could not be extracted through the incision which I had made, without the application of what I conceived to be a dangerous degree of force. I therefore made another incision in the right side of the prostate, with a straight probe-pointed bistoury, and the calculus was then easily extracted. A frightful hæmorrhage followed the last incision; so that I have no doubt that the patient would have died from loss of blood, if an assistant had not pressed the internal pudic artery against the bone with his finger for several hours. Some years before this, soon after I had been elected assistant surgeon in the hospital, Sir Everard, then Mr. Home, operated on an elderly man for calculus in the bladder. There was a considerable bleeding at the time of the operation, but it was not much regarded, and the patient was taken to his bed. About half an hour afterwards, the nurse came to me in great alarm, saying that the *stone-patient* was bleeding to death. When I reached his bedside, I found him pale and yawning, the bed drenched with blood, and a complete puddle of blood on the floor under the bed also. I drew him to the end of the bed; and, having placed him in the position in which

he had been placed for the operation, found the blood still flowing from the wound. On pressing the internal pudic artery of the left side against the bone, by means of the finger, the hæmorrhage was immediately suspended. Fortunately the patient was a thin person, and, without any great difficulty, with the assistance of a small flexible silver needle, I was enabled to pass a ligature round the trunk of the pudic artery. This fully answered the intended purpose. The patient was saved; but, if assistance had been delayed even a few minutes longer, it must have been unavailing.

I have sometimes heard it observed by by-standers, when a patient has lost a good deal of blood at the time of the operation, "that he has lost no more than it will do him good to lose." I have, however, great doubts whether, even in the case of the strongest man, the losing much blood adds to his chance of recovery; and it is evident that, in the case of a person of originally weak constitution, or of one whose bodily powers are exhausted by the previous sufferings, or who labors under disease of the kidneys or other organs, the loss of a considerable quantity of blood in the operation is likely to make all the difference between its success and failure.

I may take this opportunity of observing, that secondary hæmorrhage sometimes occurs after lithotomy: I suppose, in consequence of the separation of the slough. A little boy, on whom I had operated, lost, what was for him, a large quantity of blood; and (if I recollect right, for I have no notes of the case) some time in the second week after the operation. He was excessively lowered by the hæmorrhage, but ultimately recovered. Mr. Earle related to me a case of hæmorrhage seven or eight days after lithotomy, which occurred to him in St. Bartholomew's Hospital. The bleeding was sufficient to be alarming; but he succeeded in stopping it by introducing through the wound into the bladder a tent, composed of a quantity of lint, wrapped round an elastic gum catheter.

Patient's may, and continually do, recover, in whom circumstances have occurred causing the operation to be protracted for a considerable time. Nevertheless, other things being the same, there can be no doubt that, as the operation occupies a longer time, so it is more dangerous. When I was a student at the hospital, a large fat man, with a very large calculus, submitted to the operation. He was in good health otherwise; but the stone broke into a number of fragments. There was a deep perineum; and these circumstances combined made the operation very difficult, although performed by a very skilful surgeon. The patient was more than an hour on the table. He died very soon after being taken back to bed, manifestly from exhaustion.

The causes of failure which I have already enumerated are connected with circumstances which occur during the operation, and which may be supposed to be, to a certain extent at least, under the control of the surgeon. But there are other cases, in which death takes place as a consequence of the operation, although nothing has happened in the performance of it which the most anxious surgeon



could wish to have been otherwise. Some individuals are good subjects for the operation, and recover, perhaps without a bad symptom, although the operation may have been very indifferently performed. Others may be truly said to be bad subjects, and die, even though the operation be performed in the most perfect manner. What is it that constitutes this essential difference between these two classes of cases? It is, according to my experience, the presence or absence of organic disease. A patient with organic disease of other organs has a smaller chance of recovery than he would have had if such disease did not exist; but in organic diseases of the urinary organs, the kidneys, or bladder, or parts connected with them, that is to be especially apprehended, as increasing, ten-fold, the hazard of the operation. Of persons in whom the calculus is not of large size, on whom the operation is performed, I will not say very well, but not very unskillfully, and who are free from all organic disease, there are very few who do not recover; while, of those, in whom organic disease exists, there are few who do not die. It becomes, then, the duty of the surgeon to consider what are the organic diseases most likely to occur in combination with stone in the bladder, and how they are to be recognised in the living person, in order that he may be enabled to judge, before he proposes an operation, or before he accedes to the patient's wishes that he should undertake it, how far it is, or is not, probable that it may prove successful.

The common enlargement of the glands, such as occurs in old men, and existing in a moderate degree, does not, as far as my observation extends, add to the danger of the operation. In fact, it succeeds, on the whole, better in old men between seventy and eighty years of age, than in those who are ten or twenty years younger, although the former are likely to have the prostate of a larger size than the latter. An excessive enlargement of the prostate, however, is to be regarded as an unfavourable circumstance, inasmuch as, by adding to the distance between the bladder and skin of the perineum, and placing the bladder beyond the reach of the finger, it increases the difficulties of the operation to an extent which cannot be well estimated by one who has not had personal experience of what those difficulties are. I may take this opportunity of mentioning, that I have performed the operation on two individuals, who for some years previous, in consequence of the enlargement of the prostate, had been unable to void a drop of urine without the aid of the catheter. The first of them remained in this respect after the operation, exactly as he was before, and required the use of the catheter, even while the wound in the perineum was still open. The other has not only regained the power of making water, but at this time, two years after the operation, is still able completely to empty his bladder by his own efforts.

It sometimes happens that the prostate gland, where it projects into the bladder, is ulcerated. I have formerly explained to you what are the symptoms produced by this combination of ulcerated prostate and calculus in the bladder. It remains for me to tell you the result of the operation of lithotomy, performed under these circumstances,

When I was a very young member of our profession, I was present at two such operations. In the first of these cases the operation was recommended by two of the most eminent surgeons who were then in practice. It was performed, to all appearances, dexterously, occupying scarcely three minutes. The patient died within ten minutes after he had been replaced in bed. In the second case the bladder contained eighteen or twenty calculi (I believe more), which, of course, made the operation more tedious. As soon as it was over, the patient fell into a state of stupor, from which he never recovered. He died in about twelve hours.

Chronic inflammation of the mucous membrane of the bladder is not very uncommon in cases of stone in the bladder; and although by no means a favorable circumstance, it is not to be regarded as so unfavorable as to justify you in declining to perform the operation on this account; indeed, if you were to do so, all your patients with fusible calculus would be left to die, for it is on this chronic inflammation that the deposition of the mixed phosphates, which constitute the fusible calculus, usually depends. But chronic inflammation of the mucous membrane is sometimes aggravated, so much so, indeed, as to assume the characters of acute inflammation. The inclination to void the urine is then incessant, night and day, preventing sleep, and attended with horrible suffering. The urine deposits a large quantity of offensive, ropy, adhesive mucus, of a red color, in consequence of blood being blended with it. Such cases as these are unfavorable for the operation. It may hasten the patient's death; or more frequently the patient will die in spite of it, and the operation will have the credit of having occasioned his dissolution. I have twice performed the operation under the circumstances which I just mentioned. In neither case did I recommend it, but the contrary. The patients, however, required it of me, being driven to it by excessive suffering; and I performed it in compliance with their wishes, as a matter of duty. I will tell you the result. The first patient experienced great and immediate relief. The wound granulated, and was completely healed in less than three weeks; but nevertheless it was evident that there was something wrong. The patient was languid and listless, incapable of exertion, and not even desiring to make it. At the end of a fortnight, or rather more, he began to complain of pains, like those of rheumatism, but more severe, in the shoulder, arm, and other parts of the body. He had rigors, gradually became weaker and weaker, and died about a month after the operation. On examining the body, the mucous membrane of the bladder was found still bearing the marks of much inflammation. The inflammation had extended to the cellular membrane external to the bladder, which was, in some parts, infiltrated with lymph and serum; and a small quantity of pus had been effused in the neighborhood of one ureter. One of the kidneys was almost completely wasted; but this was manifestly the result of disease at some former period, and, in all probability, had no immediate connection with the patient's death. In the second case there was also great immediate relief; so that for some days there were no bad



symptoms of any description, and I told the patient's friends that all danger from the operation was at an end. But at the end of about a week from the time of the calculus having been extracted, he began to sink. It was difficult to say what he ailed, but it was evident that his physical powers were on the decline; and in the course of four or five days more he died. On examining the body, the mucous membrane of the bladder was found to be of a dark color, in consequence of its vessels being very much loaded with blood. The same appearance was traced along the membrane of the ureters to the pelves and infundibula of the kidneys, and these last-mentioned parts were distended with what appeared to be an admixture of pus and adhesive mucus.

From what I have seen in some other cases, I am led to believe that these patients would have died nearly as soon, perhaps quite as soon, if the operation had not been performed. They died, as I have already said, in spite of the operation, and not in consequence of it. But these are distinctions which the public, and even some members of our own profession, do not comprehend. It is desirable, on all accounts, to avoid, if possible, performing an operation under these peculiar circumstances. Such cases only tend to bring it into disrepute, and prevent some other persons submitting to it, in whom there might be scarcely a doubt as to its success.

In the last-mentioned case there was disease in the kidneys, the consequence of inflammation extending upwards along the ureters, from the mucous membrane of the bladder. But disease originating in the kidney, where the bladder itself is in a healthy state, equally adds to the danger of the operation. The patient is unable to bear the shock which the operation gives to his nervous system, and dies either immediately after the operation, or before the wound is healed. It is true that he labors under a mortal disease; and that he would have died sooner or later if the operation had not been performed; but the operation hastens his death, and is therefore to be avoided.

A boy sixteen years of age, a midshipman in the navy, had for many years labored under severe pain in the loins, and latterly had suffered from the usual symptoms of calculus in the bladder. The poor fellow, however, went on doing his duty on board ship, until he could do it no longer. He was then placed under my care. His sufferings from the calculus were excessive; and, in addition to these, he had severe pains in the loins, and occasional rigors. The urine was turbid, and when exposed to heat, or on the addition of nitric acid, exhibited a large deposit of albumen; and Dr. Prout, who was consulted with me, detected some other circumstances connected with its chemical composition, which he had never before noticed, except in combination with organic disease of the kidney. Besides all this, the patient was depressed and languid, and losing flesh. Under these circumstances, Dr. Prout and myself strongly advised that he should not undergo the operation. Some time afterwards, however, his sufferings from the disease became so severe; that he declared he would rather die than submit to them any longer; and, at the earnest

When I was a very young member of our profession, I was present at two such operations. In the first of these cases the operation was recommended by two of the most eminent surgeons who were then in practice. It was performed, to all appearances, dexterously, occupying scarcely three minutes. The patient died within ten minutes after he had been replaced in bed. In the second case the bladder contained eighteen or twenty calculi (I believe more), which, of course, made the operation more tedious. As soon as it was over, the patient fell into a state of stupor, from which he never recovered. He died in about twelve hours.

Chronic inflammation of the mucous membrane of the bladder is not very uncommon in cases of stone in the bladder; and although by no means a favorable circumstance, it is not to be regarded as so unfavorable as to justify you in declining to perform the operation on this account; indeed, if you were to do so, all your patients with fusible calculus would be left to die, for it is on this chronic inflammation that the deposition of the mixed phosphates, which constitute the fusible calculus, usually depends. But chronic inflammation of the mucous membrane is sometimes aggravated, so much so, indeed, as to assume the characters of acute inflammation. The inclination to void the urine is then incessant, night and day, preventing sleep, and attended with horrible suffering. The urine deposits a large quantity of offensive, ropy, adhesive mucus, of a red color, in consequence of blood being blended with it. Such cases as these are unfavorable for the operation. It may hasten the patient's death; or more frequently the patient will die in spite of it, and the operation will have the credit of having occasioned his dissolution. I have twice performed the operation under the circumstances which I just mentioned. In neither case did I recommend it, but the contrary. The patients, however, required it of me, being driven to it by excessive suffering; and I performed it in compliance with their wishes, as a matter of duty. I will tell you the result. The first patient experienced great and immediate relief. The wound granulated, and was completely healed in less than three weeks; but nevertheless it was evident that there was something wrong. The patient was languid and listless, incapable of exertion, and not even desiring to make it. At the end of a fortnight, or rather more, he began to complain of pains, like those of rheumatism, but more severe, in the shoulder, arm, and other parts of the body. He had rigors, gradually became weaker and weaker, and died about a month after the operation. On examining the body, the mucous membrane of the bladder was found still bearing the marks of much inflammation. The inflammation had extended to the cellular membrane external to the bladder, which was, in some parts, infiltrated with lymph and serum; and a small quantity of pus had been effused in the neighborhood of one ureter. One of the kidneys was almost completely wasted; but this was manifestly the result of disease at some former period, and, in all probability, had no immediate connection with the patient's death. In the second case there was also great immediate relief: so that for some days there were no bad



symptoms of any description, and I told the patient's friends that all danger from the operation was at an end. But at the end of about a week from the time of the calculus having been extracted, he began to sink. It was difficult to say what he ailed, but it was evident that his physical powers were on the decline; and in the course of four or five days more he died. On examining the body, the mucous membrane of the bladder was found to be of a dark color, in consequence of its vessels being very much loaded with blood. The same appearance was traced along the membrane of the ureters to the pelves and infundibula of the kidneys, and these last-mentioned parts were distended with what appeared to be an admixture of pus and adhesive mucus.

From what I have seen in some other cases, I am led to believe that these patients would have died nearly as soon, perhaps quite as soon, if the operation had not been performed. They died, as I have already said, in spite of the operation, and not in consequence of it. But these are distinctions which the public, and even some members of our own profession, do not comprehend. It is desirable, on all accounts, to avoid, if possible, performing an operation under these peculiar circumstances. Such cases only tend to bring it into disrepute, and prevent some other persons submitting to it, in whom there might be scarcely a doubt as to its success.

In the last-mentioned case there was disease in the kidneys, the consequence of inflammation extending upwards along the ureters, from the mucous membrane of the bladder. But disease originating in the kidney, where the bladder itself is in a healthy state, equally adds to the danger of the operation. The patient is unable to bear the shock which the operation gives to his nervous system, and dies either immediately after the operation, or before the wound is healed. It is true that he labors under a mortal disease; and that he would have died sooner or later if the operation had not been performed; but the operation hastens his death, and is therefore to be avoided.

A boy sixteen years of age, a midshipman in the navy, had for many years labored under severe pain in the loins, and latterly had suffered from the usual symptoms of calculus in the bladder. The poor fellow, however, went on doing his duty on board ship, until he could do it no longer. He was then placed under my care. His sufferings from the calculus were excessive; and, in addition to these, he had severe pains in the loins, and occasional rigors. The urine was turbid, and when exposed to heat, or on the addition of nitric acid, exhibited a large deposit of albumen; and Dr. Prout, who was consulted with me, detected some other circumstances connected with its chemical composition, which he had never before noticed, except in combination with organic disease of the kidney. Besides all this, the patient was depressed and languid, and losing flesh. Under these circumstances, Dr. Prout and myself strongly advised that he should not undergo the operation. Some time afterwards, however, his sufferings from the disease became so severe; that he declared he would rather die than submit to them any longer; and, at the earnest

request of himself and his friends, I removed the stone from the bladder. It was of a middle size, and composed of the oxalate of lime. Every thing in the operation and immediately after it was as favorable as possible. For the first week, the patient seemed to go on well; he was free from pain, and happy, and his health improved. The only remarkable circumstance was an enormous secretion of urine, amounting to diabetes. At the end of a few days this ceased, but it was followed by a profuse diarrhœa. There was a succession of watery evacuations from the bowels, which nothing could check. He became weaker and weaker, had a shivering, and died before the usual re-action took place, about a fortnight after the operation. On examining the body an enormous abscess was found in one kidney, and connected with it, five or six calculi of the oxalate of lime, of various sizes and of irregular shapes.

The following remarkable case occurred in this hospital in the year 1808. Sir Everard (then Mr.) Home performed the operation for stone in the bladder on a boy seventeen years of age. The patient was in a state of depression previous to the operation; but with such knowledge as existed at that time on these subjects, it was not supposed that there were any sufficient reasons why he should not undergo it. In the course of the following night, however, he died. On dissection, the bladder was found inflamed, and the mucous membrane ulcerated. The ureters, pelves, and infundibula of the kidneys were dilated. The kidneys themselves were of a pale color, and in the upper part of each of them was a large abscess. The abscess connected with the right kidney had burst into the abdomen (probably at the time of the operation), and not less than half a pint of pus had become effused into it immediately below the liver.

Before determining on lithotomy, you have no more important duty to perform than that of inquiring into the state of the kidneys. I have already explained to you what symptoms mark the existence of disease in the kidneys, connected with calculi. One thing to be especially attended to, with a view to a correct diagnosis, is the state of the urine. The urine may be alkaline, and thus in an unnatural state, and yet the kidneys may be free from organic disease, and the patient a proper subject for the operation. It is purulent and turbid urine, loaded with albumen, by which your apprehensions as to the result of an operation will be chiefly excited. Albuminous urine, however, where all other circumstances are quite favorable, is not a sufficient reason for your declining the operation. I had a patient with stone in the bladder, a gentleman sixty years of age, whose urine was constantly turbid when first voided, depositing albuminous or fibrinous matter afterwards. At first, I hesitated to recommend the operation; but finding that he had no other bad symptoms, my opinion altered. I performed the operation; the patient recovered without the smallest untoward circumstance occurring, and lived for several years, dying at last of another complaint.

Success in lithotomy must undoubtedly depend in a great degree on the manual skill of the surgeon, and on the mode in which the opera-



tion is performed; but it depends still more on the condition of the patient with respect to his general health, especially on the existence or non-existence of organic disease. Not a little may be attributed to accident, which may at one time throw in your way a succession of cases which are favorable, and at another time a succession of cases which are unfavorable, to the operation; and hence it has often happened, that a surgeon who has been fortunate in the results of his practice as a lithotomist at one period, has been unfortunate at another. An experienced surgeon has generally had an advantage over others, in consequence of his greater skill in diagnosis, by which he is enabled to determine whether the constitution is, or is not, oppressed by any organic disease, especially of the urinary organs, and parts in immediate connection with them. What I have said in former Lectures, will, I trust, be found of use to you on these occasions. But let me give you one caution more: never hastily proceed to an operation where a calculus has existed in the bladder for a great number of years. It is in such cases especially that you are to expect it to be of great magnitude, and that you are also to apprehend the existence of disease in the bladder or kidneys, or abscess in the cellular membrane of the pelvis. Be assured, that the operation seldom fails where it is resorted to at an early period; but that there is always danger in delay. Many an individual, influenced by his own fears, or in compliance with the absurd advice of his friends, has missed the period at which an operation would have been almost free from danger; has dragged on an anxious and uncomfortable existence, month after month, and even year after year; trying, at one time medicines prescribed by regular physicians, and, at another time, medicines prescribed by quacks—all to no purpose; and at last has been driven by his sufferings to make up his mind to undergo the operation, when his condition has become so altered, that a prudent surgeon would either altogether decline to undertake it, or would perform it with great unwillingness, and solely as an act of duty, or, if you please, of humanity, towards a suffering fellow-creature.

#### *On some other Methods of Lithotomy.*

Whatever advances may have made in the other parts of surgery, it may be confidently asserted, that there has been no real improvement in the lateral operation of lithotomy since it was practiced by Cheselden, more than a century ago. The method which I have described to you is, indeed, that of Cheselden, from whom it has been adopted generally, not only by the operators of this country, but by those of the continent of Europe.

There have not been wanting, however, ingenious persons, who have endeavored to extract calculi from the bladder in other ways, in the expectation of discovering an operation simpler, or safer, than that of Cheselden. Of late years, an attempt has been made in Paris to revive the high operation, in which the incision of the bladder is made

at its fundus, where it lies behind the pubes, and immediately below the part at which the peritoneum is reflected over it. The high operation was, indeed, recommended by Cheselden himself, in the early part of his career; but he soon abandoned it for the lateral operation, from which last method he never deviated afterwards. The late advocates for the high operation, however, suppose that they have made in it an essential improvement, inasmuch as they adopt means for keeping the bladder empty of urine afterwards, so as to allow the wound in its fundus to heal, without the danger of an effusion taking place into the surrounding cellular membrane. For this purpose some make an incision into the urethra from the perineum, from which they introduce an elastic gum canula into the bladder: while others employ the simpler expedient of a gum catheter introduced, by the urethra in the usual manner. I have been present on three or four occasions, when the high operation was performed; but nothing that I have witnessed would lead me to recommend it to you; nor, indeed, does it appear to me that you would be justified in the performance of it, except in the case of a thin person, with a stone of so large a size, that the extraction of it by the usual method would be either impracticable, or attended with the greatest risk to the patient's life. But even for cases such as these, it may be a question, whether there is not a better method of proceeding, in the recto-vesical operation; in which the incision of the perineum is made to extend through the tunics of the rectum and the *sphincter ani* muscle. Here the parts which afford the chief resistance to the extraction of a large stone are divided; and, although the incision of the neck of the bladder extends beyond the boundaries of the prostate, the ill consequences arising from the escape of urine into the cellular membrane are likely to be in great measure obviated, in consequence of the free opening which has been made into the rectum. If you refer to a case which I have already related, in which, some days after the removal of a calculus by the usual method, I was induced to lay the wound of the perineum, as far as the neck of the bladder, completely into the rectum, you will find in it much in favor of the recto-vesical operation in those cases, in which the great bulk of the stone makes an extensive incision of the prostate and bladder necessary. Further than this, I have little to offer, from my own experience, on this subject. In the only instance in which I performed the recto-vesical operation, the patient, who had suffered from a stone in the bladder for more than twenty years, died in about three weeks, with abscesses in the kidneys, and a large abscess on one side of the pelvis, having no communication with the wound, and which I believe to have existed long before he came under my care. The stone in this case had been supposed to be of an unusual magnitude. It proved to be much smaller than was expected; but I felt convinced at the time, that if it had been many times larger than it was, it would, nevertheless, have been extracted with the greatest facility.



*Calculi of the Prostate Gland.*

Calculi occasionally form in the ducts of the prostate gland. In the museum of this hospital there is a preparation of an enlarged prostate, in every part of which are found minute calculi, none of them bigger than a pin's head, and too numerous to be counted. In general, however, they are fewer in number, and larger in size; I have seen them as large as a pea, or even as a horse-bean. They are composed of the phosphate of lime, of a light brown color, and not unfrequently are smooth and somewhat glossy on the surface. I believe that they frequently exist for a considerable time, without the patient being aware that he labors under any kind of disease. In other cases they cause a sense of irritation, referred to the perineum and neck of the bladder, and sometimes a difficulty of making water; so that patients have applied to me, supposing themselves to labor under a stricture of the urethra, whose real complaint was the formation of prostatic calculi.

We know of no medicine that is capable of preventing the formation of this kind of calculus; and in ordinary cases there seems to be nothing for us to do, beyond the occasional introduction of a full-sized bougie, to keep the urethra dilated, and thus favor the escape of the calculi, as fast as they become disentangled from the ducts of the prostate, in which they have been generated.

There are some cases in which a number of these calculi are collected in a cyst in the prostate gland, plainly perceptible by means of a metallic sound introduced into the urethra, and just before it enters the bladder; to be felt also from the rectum, sliding on each other under the pressure of the finger. In a case of this kind you may introduce a staff into the urethra: and with this for your guide, make an incision in the perineum extending to the prostate, but not into the bladder, and thus extract the calculi. Several years ago in a case of this kind I succeeded in removing a large number of prostatic calculi with the assistance of Weiss's urethra forceps. There is always danger of some of these calculi finding their way into the bladder, and thus laying the foundation of calculi of that organ. This happened in the case to which I have just referred; so that, after I had completely emptied the cyst of the prostate, I had to remove a considerable number of calculi, of a still larger size, but of the same chemical composition, from the cavity of the bladder.

*Treatment of Calculus of the Female Bladder.*

In women, calculi of a small size are expelled, as they are in the male sex, without ulceration, or other injury to the urethra, and without the patient suffering any inconvenience afterwards.

Calculi of a very considerable size occasionally escape from the female bladder; but the natural cure in these cases is effected by a less

simple process. A woman was admitted into our hospital, under the care of the physicians. On inquiring into her case, the apothecary of the hospital found a large calculus lying in the vagina, and he extracted it with his fingers. The urethra and vagina had ulcerated, and the calculus had passed through the ulcerated opening. The patient was thus relieved of the disease under which she had for a long time labored; but it left another and very distressing disease behind it, namely an incontinence of urine. Many cases similar to this have been recorded by writers; and you will find a paper on the subject, which is well worthy of your attention, by Dr. Yellowly, in one of the volumes of the *Medico-Chirurgical Transactions*. There is reason to believe, that incontinence of urine always follows the natural cure, where the calculus has made its way out of the bladder by ulceration.

The peculiar structure of the female urethra renders it much more capable of dilatation than the urethra of the other sex; and stones of considerable size may be removed in this manner, without the aid of any cutting instrument. If you look over the early volumes of the *Philosophical Transactions*, you will find that this is no new invention; but the operation had fallen into disuse, and, indeed, I may say that it had been forgotten, when it was revived by Mr. Thomas. Mr. Thomas was called to a lady, who, I know not for what purpose, had deposited an ivory toothpick, three inches long, in her bladder. He introduced a piece of sponge tent into the urethra; as the sponge swelled, the urethra became dilated, and the toothpick was then easily extracted. Since then the same operation has been performed by Sir Astley Cooper, and various other surgeons. I have myself employed this method in several instances. In the first, I accomplished the dilatation by means of a piece of sponge tent; in the others, I made use of the dilator which Mr. Weiss has invented for this purpose, and which is undoubtedly to be preferred to the sponge tent, as it enables you to dilate the parts very gradually, and does not interfere with the free escape of the urine. None of these suffered from actual incontinence of urine, but one of them in whom the calculus was of large size could not retain more than two or three ounces of urine in the bladder afterwards.

When you attempt the dilatation of the female urethra, I would advise you to proceed gradually. The process, however, may in most instances be completed, and the stone extracted, in less than twenty-four hours. If you use the sponge tent, it should be of that kind which is made by compressing a piece of wet sponge between two pieces of board in a vice, or under a heavy weight, and not that prepared with wax; and the tent should be once or twice removed and renewed, in order that it may be increased in size, and also that the patient may not suffer from retention of urine.

But the method of dilatation is not to be recommended except in cases of calculi of moderate size. Where the stone is large, an incision of the urethra is necessary for its extraction; and this may be accomplished in the following manner:—Introduce a director or straight staff into the urethra and bladder, and then, by means of a



cutting gorget, a common straight bistoury, or the *bistouri cache* divide one side of the urethra, dilating that canal to a sufficient size for the introduction of the forceps. It has been most usual to make the incision of the urethra obliquely downwards and outwards, so as to include a small portion of the vagina. The bladder is completely within reach of the finger, and nothing can be more easy or expeditious than the method which I have just described. But the patient is generally subject to the great inconvenience of an incontinence of urine afterwards. I need not tell you how important it is that such a result should be avoided. The late Mr. Hey of Leeds, in one instance, after the operation, introduced a tent, formed of a roll of linen, into the vagina: I conclude that this was done with a view to keep the cut surfaces in a state of apposition, and cause them to unite by the first intention: at any rate the experiment succeeded, and the patient was able to retain her urine afterwards. I repeated Mr. Hay's experiment in a case in St. George's Hospital, but not with the same success. The patient, however, was a young and restless child: it was difficult to retain the tent in the vagina, and I do not think that, in this instance, the method was fairly tried. I have not repeated the experiment, as I have been informed that it has failed in other hands.

I was led to believe that the whole of the female urethra could be dilated easily, and to a great extent, with the exception of the external orifice, and, under this impression, in the next case which came under my care, I tried another modification of the operation. Having introduced a straight staff into the urethra, I made a small incision extending through the peculiar structure which surrounds the orifice of that canal, but no further. The wound did not extend more than one third of an inch in any direction. I was then enabled gradually, and with very little force, to introduce a pair of forceps, and extract the calculus. The patient after the operation was not troubled with actual incontinence of urine. She could retain it for one or two hours, but not so long as an ordinary person. The calculus, however, in this case, was not above an average size; and I do not suppose that the same method of operating would be found applicable to a case in which it was of large dimensions.

Soon after this I had an opportunity of trying another method of operating, which, as I was informed, had been adopted by an eminent provincial surgeon, and which had not been followed by the usual incontinence of urine. I introduced a *bistouri cache* into the urethra, having previously fixed the screw in the handle of the instrument, so that the cutting edge could not be made to project more than to a very small extent; perhaps to about one sixth of an inch. Then drawing out the *bistouri*, with the cutting edge turned directly upwards, I endeavored to divide the membrane of the urethra immediately below the symphysis of the pubes, without allowing the incision to extend into the contiguous cellular structure. The next step of the operation was to introduce Weiss's dilator, and dilate the urethra, so as to allow of the introduction of the finger, and afterwards of the forceps, into the bladder. As the urethra now offered no resistance,

this dilatation was readily effected in the course of a few minutes; and thus the stone was extracted. The patient, like the preceding one, did not suffer from actual incontinence of urine after the operation; she could not, however, retain it for so long a time as before the disease existed; I believe not longer than two hours.

But I have performed the same operation since in several other cases with a still more favorable result. In two of them I ascertained that the urine was perfectly retained afterwards. The stones, however, in these cases were of moderate size. Where the stone is large, I suspect that there is no method of removing it entire from the female bladder without an incontinence of urine, to a greater or less extent, being a consequence of the operation.

---

## LECTURE XV.

### LITHOTRITY.

UNTIL within the last few years, lithotomy was the only method practised by surgeons for the purpose of extracting calculi from the bladder. In the year 1821, Sir Astley Cooper first succeeded in the removal of small calculi by means of the urethra forceps. Since then a still more important addition has been made to our means of relieving patients afflicted with this malady, by the invention of an operation which has for its object to crush the calculus, and thus enable it to escape, or be withdrawn from the bladder and urethra in fragments.

Various individuals have claimed some share of the credit of introducing this operation to the world. As long ago as the year 1775, General Martin, then a resident in India, contrived to pass an instrument through his urethra into the bladder, which he employed as a rasp, by means of which he was enabled to detach small fragments of a calculus. It was generally believed that he had succeeded in effecting a cure of his complaint. But the report was exaggerated, as is proved by the singular history of his case, published by Sir Everard Home at the end of the second volume of his *Observations on Diseases of the Prostate Gland*.

In the year 1817, Mr. Elderton, formerly a student in attendance on my lectures, sent for my inspection the plan of an instrument which he proposed to make with a view to this kind of operation; but, as far as I know, no such instrument was ever employed on the living person.

But whatever may have been thought, or said, or planned by others, there seems to be no doubt that the individual who first actually practised this method of treating calculous disorders was M. Civiale of



Paris, and to him therefore the world is mainly indebted for this great improvement in surgery.

It scarcely ever happens, however, that an invention is perfect in the first instance; and the operation which I am about to describe is not that which was introduced by M. Civiale formerly, nor which that distinguished surgeon himself practices at the present time.

Many years ago Mr. Weiss made an instrument on the principle of what I have called the sliding forceps, having a screw attached to it for the purpose of dividing calculi, while still in the bladder, into fragments; but it was of rude construction, as it then was, was certainly not fitted for use on the living person.

Some time after M. Civiale had begun to practice the mechanical destruction of calculi in Paris, Baron Heurteloup engaged in the same undertaking in this country. At first he pursued M. Civiale's method of operating; but finding it liable to some very serious objections, he adopted the principle of sliding forceps invented by Mr. Weiss, at the same time modifying its shape so as to render it more convenient for being passed into the bladder, and for seizing and retaining the stone afterwards. Besides this he made another change in the instrument, rejecting the screw, and substituting for it a peculiar apparatus which enabled him to crush the calculus by the stroke of a hammer. Now the first of these alterations made by Baron Heurteloup I believe to have been of essential importance; in fact, without it the instrument would have remained wholly inapplicable to any useful purpose. But as to the second alteration I cannot say that any thing that I have seen, either in my own practice or in that of others, would lead me to regard it as being any improvement whatever. On the contrary, all the experience which I have had would lead me to believe that in those cases, to which this operation can be properly applied, there is nothing that can be done by the hammer which may not be done quite as effectually by the screw, while the latter method is not liable to many serious objections which may be urged against the former.

It is not, however, my intention to enter into any critical discussion of the comparative merits of these two methods of proceeding. My principal object in these lectures is to give you the results of my own experience, to put you as nearly as I can do so in my own place; and I shall, therefore, without further comment, proceed to explain the steps of the operation which I have myself adopted, and which I would recommend you to practice.

The instrument made by Mr. Weiss, and which seems to me to be not capable of much improvement, consists of a very strong sliding forceps, having adapted to it a handle, in which is a screw, by means of which the forceps may be closed with sufficient force to break the calculus, which is seized between the blades. The average length of Mr. Weiss's instrument is about eleven inches exclusive of the handle. It is quite straight for about the first nine inches, while the remaining two inches, or two inches and a half, at the extremity remote from the handle, are bent with a more sudden turn than is usual in a catheter. You will require to be provided with several instruments

of this kind of various sizes, and with some variety of shapes. For calculi of a small size the construction (except as to the addition of the screw) need scarcely differ from that of the common urethra-forceps which I described formerly; but for larger ones the opposite blades of the forceps should be furnished with projections or teeth; and for those of a still larger size you will find it convenient to be provided with a forceps, in the fixed blade of which there is a longitudinal slit, while there is a corresponding wedge-like projection, fitted to enter the slit, in the opposite surface of the movable blade. In using this instrument you will extract no fragments of the calculus at the time; they will drop into the bladder through the longitudinal aperture; but there is this advantage in it, that it will enable you to crush a calculus which might not be easily crushed otherwise, and, in fact, one of any magnitude.

On some occasions you will require an instrument of greater length than those which I have mentioned. I have one thirteen inches long, which I had made for a patient with an enormous irreducible inguinal hernia, and in whom the common forceps would scarcely reach the neck of the bladder.

The diameter of the lithotrity-forceps may vary according to the size of the calculus and that of the urethra. As a general rule, and as a measure of security, it should be as large as the urethra will readily admit. With the same view care should be taken that the steel is properly tempered, sufficiently so to prevent it being liable to bend, and not so much as to make it brittle.

For obvious reasons the lithotrity-forceps should be of a cylindrical form in every part, except, of course, in the handle. You will, however, find it convenient to be provided with one, the blades of which beyond the curvature are somewhat flattened, and in proportion broader than elsewhere. I saw such an instrument in the hands of M. Civiale, and have found it very useful for the purpose for which he recommends it; namely, the seizing and crushing the smaller fragments after all the larger ones have been disposed of.

---

I shall point out to you hereafter the class of cases to which, as it appears to me, this operation is especially applicable. But it being admitted that a particular case is of this description, still it is necessary that the patient should be placed in the most favorable condition for the performance of the operation, and some preparatory measures are usually required for this purpose.

As I have observed on a former occasion, the forceps should never be used in an empty bladder, nor in one which cannot retain at least six ounces of water without inconvenience. Often when you are first consulted the bladder is so irritable that the patient strains to empty it even when there is not more than two ounces of urine in it. Under these circumstances he ought to remain, not only in a state of repose,



but absolutely in the recumbent posture, and once daily, or in some instances on the alternate days, a catheter having been introduced, some ounces of tepid water should be injected into the bladder by means of a syringe. In this manner the bladder will be gradually rendered more capacious, so that in the course of a week or ten days you will be enabled to proceed to the operation.

It may be that the bladder is not only irritable, so that it will not contain more than a very small quantity of liquid, but that its lining membrane is affected with a chronic inflammation, causing a large deposit of adhesive mucus in the urine. Here, also, it is advisable to defer the operation, and in addition to the recumbent posture, and the injection of tepid water, you may prescribe narcotics, the decoction of the *pareira brava*, and such other remedies as are useful in cases of chronic inflammation of the bladder under other circumstances. An abundant formation of adhesive mucus always forms a great objection to any attempt being made to crush a calculus; first, because it indicates such a condition of the bladder as would render it but ill capable of bearing the disturbance which the operation must in a greater or less degree occasion; and, secondly, because the circumstances of the fragments of the calculus being liable to become entangled in the viscid secretion forms a considerable impediment to their being seized by the forceps, as well as to their escape afterwards. It is otherwise where the mucus exists only in small quantity. This forms no objection to the performance of the operation; and indeed it will often happen that the bladder is sensibly relieved, and that the mucus altogether disappears after the first crushing of the calculus, and even before there has been time for any of the fragments to come away.

It is necessary that the urethra should be capable of admitting an instrument of sufficient size and strength for crushing the calculus. A small urethra may be required to be dilated by the occasional introduction of a bougie. In some instances there is a natural contraction of the urethra immediately behind, or even within the glans, which cannot easily be dilated by common means, and which it is best to divide with a bistoury.

I shall explain hereafter that there are certain states of enlarged prostate gland which are very unfavorable to the operation, making it either very difficult or wholly impracticable. There are other cases in which there seems to be a tumid condition of the prostate gland, forming no small impediment to the introduction of the instrument, and rendering the part liable to bleed on the attempt being made, but which being the result of accidental causes will subside after a few days of constant repose in the recumbent posture. I have observed this state of things to exist especially after travelling in a carriage; and it forms one of many reasons, where the patient has come from a distance, for not recommending the operation to be had recourse to until he has had ample time to recover from the fatigues of his journey.

It being supposed that the necessary precautions have been taken, and that there is no reason for further delay as to the performance of the operation, we have to consider the steps of the operation itself.

The patient should be placed in the recumbent posture, lying on his back, either on a sofa, or on the edge of a bed, with his feet supported by two chairs. In the former case the surgeon will be on one side, and in the latter he will be immediately in front of the patient. A bolster or thick cushion should be placed under the pelvis so as to keep the neck of the bladder somewhat elevated. A silver catheter is then to be introduced into the bladder, through which, by means of a syringe, such a quantity of tepid water should be injected as can be easily borne. The catheter used for this purpose should be provided with a stopcock, and the extremity of it should not be prolonged a great deal beyond the curvature. It may then be used, not only as a catheter, but also as a sound, for the purpose of exploring the bladder, and ascertaining in what part of the bladder the calculus is, at that time, lodged. This knowledge is always useful, but it is by no means indispensable; and I have often been able to seize a small stone with the forceps which I had not been able to detect by other methods previously. The injection of the bladder having been completed the catheter is to be withdrawn, and the lithotripsy-forceps is to be introduced in its place. In consequence of the peculiar shape of the latter this is less easily accomplished than the introduction of the catheter. The mere depression of the handle is not always sufficient to make it enter the bladder; and it is often necessary at the same time to apply a moderate but steady force during the time that the curved part of the instrument is passing through the neck of the bladder. This is especially the case where the prostate gland is in any degree enlarged. You will know when the instrument has fairly entered the bladder by the facility with which you can move it any direction, and by your being able to open the bladder to any extent without giving the patient pain. You may then explore the bladder with the forceps, and endeavor to ascertain the exact situation of the calculus in it. If it be lying on one side, by opening the blades and then gently and cautiously turning them towards it, you will probably be enabled to seize it. If you do not succeed by this method, by the following you will rarely fail.

Raise the handle of the forceps so as to bring the convexity of the fixed blade in contact with the posterior part of the bladder; then open the movable blade, at the same time making a moderate pressure downwards in such a manner as to depress the bladder towards the rectum. The instrument being then gently shaken by a lateral motion of the hand the calculus, in whatever part of the bladder it may be situated, will roll between the blades and will be seized by closing them. Having been thus carefully secured, by turning the screw it is broken into fragments. The whole of this is a very simple process, requiring but little practice to make you a perfect master of it. When the calculus has been once broken, the fragments are to be seized and crushed in the same manner. They will fall one after another into the grasp of the forceps; and there is no limit to the number that may be crushed at one time, except what is afforded by the diameter of the urethra. Every fragment that is crushed adds



to the accumulation of calculous matter; and if the accumulation be very large, it becomes difficult, or impossible, to withdraw the instrument without injury to the membrane of that canal. The marks on the handle of the instrument inform you of the exact extent to which the blades are separated; and you must use your own discretion, founded on your knowledge of the size of the urethra, as to the point at which you should stop. The forceps first used being then withdrawn, you may use a second, and even a third, in the same manner; and thus you may not only crush a great number of fragments at one operation, but you may remove from the bladder a great deal of what has been crushed.

I have said that, lest the urethra should be injured in this part of the operation, you are to be careful to withdraw the forceps before the blades are too much separated from each other by the calculous matter collected between them. With the same view you should withdraw it slowly and gently, as it is better that the urethra should be forcibly stretched, or bruised, or lacerated.

The directions which I have just given will apply to all cases in which the calculus is of moderate dimensions. But when you have reason to believe that it is of larger size it will be more prudent to use, in the first instance, the lithotrity-forceps which I have already described as having a longitudinal slit in the fixed blade, and a corresponding wedge-like projection in the movable blade. I believe that there is scarcely any calculus, however large, which will not yield to the pressure of this instrument. It is true that it will simply break it into fragments, and that none of the latter will be brought away between the blades. But it is required only in the first instance, and the common forceps, which answers both purposes, may be used afterwards.

When as much has been done as you think can be done with prudence at one operation, the catheter should be again introduced, and the bladder emptied of the water which it contains. Another syringe-full of water may then be injected, which the patient may be left to void by his own efforts, or which may be drawn off by means of a large catheter, with two apertures near the extremity of sufficient size to allow some of the smaller fragments to escape through them.

I have heard of a patient being allowed to walk about as usual immediately after the operation. But I am satisfied that this is a most unsafe and imprudent practice, and that it is much wiser to insist on his remaining quiet on a sofa or in bed. It is often prudent to administer a dose of opium afterwards; and at any rate this should always be done when the forceps has had a good deal of calculous matter accumulated in it, so that the urethra must have been forcibly dilated during their extraction. Such forcible dilatation or stretching of the urethra is in the greater number of instances followed by a rigor; and a dose of opium administered after the operation will seldom fail to prevent this ill consequence. An aperient pill composed of the compound extract of colocynth, combined with the *pilula hydrargyri*, may be administered in the evening, with a view to counteract the in-

fluence of the opium in stopping the action of the bowels and the secretion of the liver.

It is necessary that you should watch the patient afterwards, lest he should suffer from retention of urine, produced by the lodgment of some of the remains of the calculus in the urethra, and which might render the introduction of a small catheter necessary. But this is an inconvenience which very rarely occurs, where the patient remains in a state of repose after the operation; and, indeed, it is remarkable, that the fragments left in the bladder often do not seem to find their way into the urethra for the first day or two after the calculus has been crushed. From this period they begin to pass away with the urine; and the patient should be desired to collect and preserve them, in order that you may be enabled to form some kind of opinion as to the bulk of the calculus which has been broken down. For the most part the escape of the fragments takes place without difficulty, and with little inconvenience to the patient. I never met with but two instances in my own practice, in which the lodgment of them in the urethra was productive of any real harm, and of these I shall give you an account hereafter.

Where a calculus is of small size, and there is no unusual irritability of the bladder, a single operation is often sufficient for the patient's cure. In less favorable cases it may be necessary to repeat it several times. The intervals between the respective operations must vary according to circumstances; the only rule that can be laid down being, that the operation should never be repeated until the patient has recovered from the effects of what had been done previously, and that it should not be delayed long afterwards.

It is, of course, of essential importance that every portion of the calculus should find its way out of the bladder; and a principal objection made to this operation has been, that the smallest fragment, if it so happens that it has been left behind, will occasion a recurrence of the disease. To prevent so great an evil it is necessary that you should explore the bladder carefully, not only with the sound, but with the forceps, at least twice after you have had reason to believe that the cure was complete; and with this precaution, according to my experience, in cases in which the patient is able to empty the bladder by his own efforts, the chance of a fragment remaining to form the nucleus of a future calculus is so small that it need not enter into your calculations. But it is quite otherwise in those cases in which the patient, in consequence of an enlargement of the prostate gland, is unable to empty the bladder by his own efforts. Hence only a small portion of the crushed calculus will come away in the stream of urine, and you must be satisfied with washing out the remainder of it through the catheter by repeated injections of tepid water. Mr. Weiss has invented a forceps which, when the blades are opened in the bladder, answers at the same time the purpose of a catheter, and this is often very useful; still on ordinary occasions you will find nothing to answer the purpose better than a silver catheter of as large a size as the urethra, with two very large apertures near the closed ex-



trinity, not placed laterally, as in ordinary catheters, but one on the anterior or concave, and the other on the posterior or convex surface. It may indeed be said, that, in the case now referred to, this kind of operation ought not to be recommended. But it will sometimes happen, that although the patient may have had no difficulty of emptying the bladder before the operation, the prostate may be rendered tumid in consequence of its being irritated by the repeated introduction of instruments, so that he is unable to empty the bladder afterwards. Besides, although this state of things adds to the difficulty of the operation, it is not in itself sufficient to prevent it being brought to a successful termination; and in cases in which there is good reason to believe that the calculus is of a small size, it forms no objection to it.

The effects of a surgical operation are seldom merely negative; and a prudent surgeon before he undertakes it will feel that it is his duty to look, not merely at the favorable, but also at the unfavorable results, by which it may be followed. We can by no other means form a just estimate of what the operation is really worth, and in this, as in all other cases, the first step towards avoiding a threatened evil, is to know what the evil really is, and what are the peculiar circumstances to which its existence may be traced.

It may be said, that hæmorrhage is one of the inconveniences attendant on the operation of lithotrixy. It may arise from the forcible introduction of the lithotrixy-forceps through the neck of the bladder, where the prostate gland is somewhat enlarged; or, from the dilatation of the prostate and urethra in the act of withdrawing the forceps, when the blades are charged with a considerable accumulation of the crushed calculous matter. The loss of blood, for the most part, does not amount to more than a few drops; but in some instances I have known it to be sufficient to discolor the urine for one or two days afterwards. In a former Lecture I have referred to certain cases of enlarged prostate, in which the vessels of that gland are so turgid with blood as to be liable to bleed profusely, even on the introduction of a catheter, and I conclude that, in such cases, considerable hæmorrhage would also follow the use of the lithotrixy-forceps. They must, however, be of rare occurrence, as I have met with no instances in which hæmorrhage has taken place to such an extent as to interfere with the complete performance of the operation.

The occurrence of rigors is another ill consequence of lithotrixy in some instances. I have already mentioned that a rigor is usually produced by the stretching of the urethra at the time of the forceps being withdrawn from the bladder, and that in most instances, it may be prevented by the exhibition of a dose of opium immediately after the operation. This symptom may, however, arise from other causes; as, for example, from a fragment of calculus finding its way into the urethra, which is too large to be expelled by the pressure of the stream of urine; and it sometimes happens that the effect of a dose of opium is, not to prevent the rigor altogether, but to cause it to be deferred until the following day. The liability to rigors, however,

where due precautions are used, is seldom such as to interfere in any great degree with the process necessary for the patient's cure, and his ultimate recovery; and I never met with a case in which it could be said to have done so, unless, indeed, we suppose it to have exercised an unfavorable influence, by hastening the progress of disease of a kidney, in a case, the particulars of which I shall have occasion to mention before this Lecture is concluded.

I have already referred to two cases in which there is reason to believe that a fragment of a calculus impacted in the membrane of the urethra had been concerned in producing an urinous abscess of the perineum. In each of these there was a good deal of pain, and constitutional disturbance, until the abscess was opened, and this being done, the symptoms were immediately relieved. The first of these patients labored under symptoms of renal disease, under which he gradually sunk, and died at the end of about two months after the abscess was opened; a tumor having some time before his death presented itself in the abdomen, which I believe to have had its seat in one of the kidneys, though I had not the opportunity of ascertaining the fact by a *post-mortem* examination. In the other case, the opening in the perineum healed, under very simple treatment, and the patient was soon restored to health. The rule of practice which applies to other abscesses in the perineum applies to these also. They cannot be opened at a too early period, and they become dangerous when this operation is delayed.

In some instances the patient complains of pain referred to the whole canal of the urethra, in consequence of a considerable number of fragments escaping at the same time. In others, he experiences much irritation of the bladder, and an incessant desire to void his urine, apparently produced by a fragment remaining for some time lodged in the urethra, close to the neck of the bladder. It is evident that the lodgment of a large portion of a calculus, or an accumulation of small ones in any part of the urethra, may occasion an absolute retention of urine. This is, however, a rare occurrence, as I have not met with it, except where it lasted only for a limited period of time, in my own practice. Of course, a diminution, and often a great diminution, of the stream of urine is always to be looked for, while the fragments are coming away, and the involuntary straining to make water, which on these occasions, is a principal agent in the final expulsion of them from the urethra.

With a view to promote the escape of the fragments, by increasing the flow of urine, the patient may be directed to drink plentifully of barley water and other diluting liquors. Where any kind of inconvenience arises from the retention of the fragments in the urethra, a catheter, of a middle size, may be introduced carefully into the bladder. In some cases it will, by making even a slight alteration in their position, enable them to come away easily, though they seemed to be almost immovable before. In other cases it may push them back into the bladder, to be more minutely crushed at the next operation. I have sometimes given the patient relief by extract-



ing portions of a calculus which lay in the anterior part of the urethra, with a long slender forceps, and I suppose that cases may occur, in which a fragment may be so completely impacted in the urethra, as to make it necessary to make an incision in the perineum or penis for its removal. I have not, however, ever had occasion to resort to this expedient in my own practice.

But in all cases prevention is better than cure, and the means of preventing the evils which have been just described are very much in our own power, and in that of our patients. A state of perfect repose, in the recumbent posture, except when it is necessary to remove from one room to another, should be considered as indispensable after the operation, and I venture to say, that where this rule is observed, it will very seldom happen that the passage of the fragments along the urethra is productive of any serious inconvenience.

Inflammation of the mucous membrane of the bladder, indicated by a deposit of adhesive mucus from the urine, and a too frequent micturition, with more or less of a febrile excitement of the system, is sometimes an immediate result of the operation, subsiding spontaneously in the course of two or three days. Occasionally it seems to be connected with the lodgment of some fragments of the calculus in the neck of the bladder, and continues until they are removed from that situation, either by passing forwards along the urethra, or by being pushed backwards into the bladder by the catheter. Several years ago I was called to see a case in consultation, in which, after the breaking of a calculus, severe inflammation of the bladder followed, continuing, in spite of all remedies employed, until, at the end of three or four weeks, it terminated in the patient's death. The calculus, in this case, had been of a very large size, and the numerous fragments into which it had been divided might reasonably be supposed to have been an abundant source of irritation. But, in addition to this, I have good reason to believe, that the patient had not remained in that state of complete repose, which, for other reasons, I have already recommended, and which seems to be, on every occasion, necessary to his security after the operation.

It is due to you, that you should be made acquainted with the unfavorable circumstances which may attend on this mode of treatment; but you are not to suppose that it often happens that these exist to any considerable extent, or that the probability of their occurrence is sufficient to counterbalance the great advantages which the new operation often presents over that of lithotomy. It would be a great error to represent it as preferable on all occasions; but it is so in a great many instances; and I shall next endeavor, as a guide for your future practice, to explain by what signs you may distinguish from each other the cases to which it is applicable, and those to which it is not.

In boys under the age of puberty lithotomy is so simple, and so generally successful, that we ought to hesitate before we abandon it for any other kind of operation.

There is also a manifest objection to lithotripsy in these cases, on account of the small size of the urethra, which is such that it would

not admit of the introduction of instruments of sufficient strength to crush a calculus of more than moderate dimensions.

In the female sex, the extraction of calculus from the bladder by the ordinary methods is attended with little danger; while the operation of crushing it is rendered difficult, in consequence of the short and wide urethra allowing the water which has been injected into the bladder to escape by the side of the lithotripsy-forceps before the operation is completed.

In cases in which the calculus has attained a very large size, it is often difficult to seize it with the lithotripsy-forceps; the operation of crushing requires to be repeated a great number of times, so that many weeks may elapse before the cure is accomplished; a larger quantity of fragments is left in the bladder, of which the necessary consequence is a great liability to inflammation of the mucous membrane; and of course the inconvenience produced by the passage of the fragments along the urethra is multiplied as compared with what happens when the calculus is smaller. These circumstances form a sufficient objection to the operation of lithotripsy in those cases. It is true, that there are unfavorable cases for lithotomy also; but I have little doubt that the latter method is the safer of the two. It admits of a question, whether, in such cases, the two modes of operating may not be advantageously combined, the calculus being crushed into three or four pieces first, and extracted by the usual incision afterwards. The operation of lithotripsy, as I have already observed, is not well adapted to those cases of enlargement of the prostate gland, in which the patient is enabled to empty the bladder by his own efforts, unless the calculus be of a small size, so that there may be no great difficulty in washing the minute fragments, into which it has been crushed, out of the bladder through a large catheter.

There is also another objection to the operation in some cases of enlargement of the prostate, namely, that the tumor which projects from it into the cavity of the bladder, makes it difficult to elevate the handle of the forceps sufficiently to seize the stone easily in the usual manner.

I have described the dangers which attend on lithotomy in those cases in which a calculus of the bladder is complicated with disease of the kidney. One of the principal of these is connected with the loss of blood, which that operation must always occasion to some extent, and not unfrequently to a great extent, in spite of the best exertions of the surgeons to prevent it. I have no doubt that, in such cases, the operation of crushing is the safest method of proceeding; but a small shock to the system will sometimes destroy the life of a patient who labors under renal disease, and it will be often more prudent to trust to the means which we possess of palliating his sufferings, than to run the risk of shortening his life in the endeavor to obtain a cure. The case which I am about to describe is, in many respects, interesting, and especially so as it serves to illustrate the ill consequences which may follow even a trifling operation, where there is a considerable disease of the kidney.



A gentleman consulted me in the year 1836 on account of calculi in the bladder. Six months previously he had been placed under circumstances which compelled him to retain his urine for an unusual length of time, and he experienced great distress in consequence. From that period he had suffered more or less from pain in the loins, to which the usual symptoms of calculi of the bladder were superadded afterwards. He presented no appearance of ill health otherwise. Having injected the bladder with tepid water in the usual manner, I seized two very small stones with the lithotrity-forceps, and crushed them, extracting nearly the whole of the fragments between the blades of the instrument. All this was accomplished without the smallest delay or difficulty; but the patient was seized with a rigor afterwards. At the end of about forty-eight hours he was suddenly attacked by a most severe and agonising pain referred to the loins, which could only be mitigated by a large dose of opium. In the course of a few hours the pain had subsided, and the pulse, which had been very frequent while the pain lasted, was reduced to the ordinary standard. After two days more he had another similar attack, which subsided like the former one, leaving him apparently perfectly recovered. Subsequently he had many other attacks of the same kind, lasting for a longer time, and recurring at shorter intervals, one of them being preceded by a severe rigor. The pulse now remained always increased in frequency, the skin was hot, delirium alternated with drowsiness, and the patient gradually sunk, and died on the tenth day after the operation. On examining the body, the bladder was found in a perfectly healthy state, except that it contained four small calculi, not larger than horse-beans, which, if the patient had survived, would have been easily crushed by another operation. The right kidney was very little altered from its natural condition. The left kidney was of double the ordinary size. The investing membrane adhered more closely to the surrounding adeps than to the kidney itself, and when it was removed the surface of the kidney presented a mottled appearance, in consequence of a great number of depositions of straw-colored lymph in its substance. The membrane of the *infundibula* and *pelvis* was inflamed, and these cavities contained a considerable quantity of dark-colored muco-purulent fluid.

---

With the exception of such cases as those which have been enumerated, there are few to which this method of treatment may not be advantageously applied. It may be said that the exceptions are numerous; but they are the result chiefly of delay. If a patient seeks the assistance of a competent surgeon within six or even twelve months after a calculus has descended from the kidney into the bladder, the urine having remained acid, it will rarely happen that he may not obtain a cure by a single operation, and with so small an amount of danger that it need scarcely enter into his calculations. As time advances,

the facility with which he can be relieved diminishes, and after the lapse of two or three years, especially if the urine has become alkaline, it is probable that the calculus will have attained such a size as to render the old operation preferable, and that the access of disease in the bladder or kidneys may render any operation hazardous. It would be absurd to say, and it would be unreasonable of human-kind to expect, that an operation which has for its object to relieve them of a disease so terrible as that of a stone in the bladder, can be always free from inconvenience, and difficulty and danger. Nevertheless, from what experience I have had, I am satisfied that the operation of lithotripsy, if had recourse to only in proper cases, is not only much more successful than that of lithotomy, but that it is liable to fewer objections than almost any other of the principal operations of surgery.

THE END.









PHILADELPHIA: LEA AND BLANCHARD, 1857.

---

CATALOGUE  
OF  
MEDICAL, SURGICAL  
AND  
MISCELLANEOUS BOOKS,  
PUBLISHED  
BY  
LEA AND BLANCHARD,  
PHILADELPHIA:  
**AND SOLD BY ALL BOOKSELLERS.**

---

## TO THE MEDICAL PROFESSION.

THE following list embraces works on Medical and other Sciences issued by the subscribers. They are to be met with at all the principal bookstores throughout the Union, and will be found as low in price as is consistent with the correctness of their printing, beauty of execution, illustration, and durability of binding. No prices are here mentioned, there being no fixed standard, as it is evident that books cannot be reprinted at the same rate in New Orleans or Chicago as in Philadelphia. Any information; however, relative to size, cost, &c., can be had on application, free of postage, to the subscribers, or to any of the medical booksellers throughout the country.

LEA & BLANCHARD, Philadelphia.

### DICTIONARIES AND JOURNALS.

- American Journal of the Medical Sciences, quarterly, at \$5 a year.  
 Cyclopædia of Practical Medicine, by Forbes, Tweedie, &c., edited by Dunglison, in 4 super royal volumes, 3154 double columned pages.  
 Dunglison's Medical Dictionary, 7th ed., 1 vol. imp. 8vo., 912 large pages, double columns.  
 Hoblyn's Dictionary of Medical Terms, by Hays, 1 vol. large 12mo., 402 pages, double columns.  
 Medical News and Library, monthly at \$1 a year.

### ANATOMY.

- Anatomical Atlas, by Smith and Horner, large imp. 8vo., 650 figures.  
 Horner's Special Anatomy and Histology, 7th edition, 2 vols. 8vo., many cuts, 1130 pages.  
 Horner's United States Dissector, 1 vol. large royal 12mo., many cuts, 444 pages.  
 Wilson's Human Anatomy, by Goddard, 4th edition (1848), 1 vol. 8vo., 252 wood-cuts, 580 pp.  
 Wilson's Dissector, or Practical and Surgical Anatomy, with cuts, 1 vol. 12mo., 444 pages.

### PHYSIOLOGY.

- Carpenter's Principles of Human Physiology, by Clymer, 1 vol. 8vo., 752 pp., 317 illustrations, 3d edition, much improved and enlarged.  
 Carpenter's Elements, or Manual of Physiology, 1 vol. 8vo., 566 pages, many cuts.  
 Connection between Physiology and Intellectual Science, 1 vol. 18mo., paper, price 25 cents.  
 Dunglison's Human Physiology, 6th edition, 2 vols. 8vo., 1350 pages, and 370 wood-cuts.  
 Harrison on the Nerves, 1 vol. 8vo., 292 pages.  
 Matteucci on the Physical Phenomena of Living Beings, 1 vol. 12mo., 388 pp., cuts.  
 Müller's Physiology, by Bell, 1 vol. 8vo., 886 pp.  
 Roge's Outlines of Physiology, 8vo., 516 pages.  
 Solly on the Anatomy, Physiology and Pathology of the Brain, 1 vol. 8vo., 496 pp. and 118 cuts.  
 Todd and Bowman's Physiological Anatomy and Physiology of Man, with numerous wood-cuts. (Publishing in the Medical News.)

### PATHOLOGY.

- Abercrombie on the Stomach, 1 vol. 8vo., 320 pp.  
 Abercrombie on the Brain, 1 vol. 8vo., 324 pp.  
 Alison's Outlines of Pathology, &c., 8vo., 420 pp.  
 Berzelius on the Kidneys and Urine, 8vo., 180 pp.  
 Blakiston on Diseases of the Chest, 1 vol., 384 pp.  
 Bennet on the Uterus, 1 vol. 12mo., 146 pages.  
 Blood and Urine Manuals, by Reese, Griffith and Markwell, 1 vol. 12mo., 462 pages, 6 plates, a new work, 1848.  
 Budd on the Liver, 1 vol. 8vo., 392 pages, plates and wood-cuts.  
 Burrows on Cerebral Circulation, 1 vol. 8vo., 216 pages, with 6 colored plates.  
 Billing's Principles, 1 vol. 8vo., 304 pages.  
 Bird on Urinary Deposits, 8vo., 228 pages, cuts.  
 Hasc's Pathological Anatomy, 8vo., 379 pages.  
 Hope on the Heart, by Pennock, a new edition, with plates, 1 vol. 8vo., 572 pages.  
 Hughes on the Lungs and Heart, 1 vol. 12mo., 270 pages, with a plate.  
 Lallemand on Spermatorrhæa; 1 vol. 8vo., 320 pp.  
 Philip on Protracted Indigestion, 8vo., 240 pp.  
 Philips on Scrofula, 1 vol. 8vo., 350 pages.  
 Prout on the Stomach and Renal Diseases, 1 vol. 8vo., 466 pages, colored plates.  
 Ricord on Venereal, new ed., 1 vol. 8vo., 256 pp.  
 Vogel's Pathological Anatomy of the Human Body, 1 vol. 8vo., 536 pages, col. plates.  
 Walshe on the Lungs, 1 vol. 12mo., 310 pages.

- Wilson on the Skin, 1 vol. 8vo., new ed., 440 pp.  
 Same work, with colored plates.  
 Whitehead on Sterility and Abortion, 1 vol. 8vo., 368 pages.  
 Williams' Pathology, or Principles of Medicine, by Clymer, a much improved edition, 1848, 440 pages, 1 vol. 8vo.  
 Williams on the Respiratory Organs, by Clymer; 1 vol. 8vo., 500 pages.

### PRACTICE OF MEDICINE.

- Ashwell on the Diseases of Females, 2d edition, 1848, 1 vol. 8vo., 520 pages.  
 Bartlett on Fevers, new edition, much enlarged, a complete work on the Fevers of the U. S. Now ready. 550 pages.  
 Benedict's Compendium of Chapman's Lectures, 1 vol. 8vo., 258 pages.  
 Chapman on Thoracic and Abdominal Viscera, &c., 1 vol. 8vo., 384 pages.  
 Chapman on Fevers, Gout, Dropsy, &c. &c., 1 vol. 8vo., 450 pages.  
 Colombat de L'Isère on Females, translated and edited by Meigs, 1 vol. 8vo., 720 pages, cuts.  
 Coudie on the Diseases of Children, 2d edition, 1 vol. 8vo., 658 pages.  
 Churchill on the Diseases of Females, by Huston, 4th edition, 1 vol. 8vo., 604 pages.  
 Clymer and others on Fevers, a complete work in 1 vol. 8vo., 600 pages.  
 Dewees on Children, 9th ed., 1 vol. 8vo., 548 pp.  
 Dewees on Females, 9th edition, 1 vol. 8vo., 532 pages, with plates.  
 Dunglison's Practice of Medicine, 3d edition, (1848.) 2 vols. 8vo., 1500 pages.  
 Esquirol on Insanity, by Hunt, 8vo., 496 pages.  
 Meigs' Letters on Diseases of Females, 1 vol. 8vo., 670 pages. A new work, 1848.  
 Meigs on Certain Diseases of Infancy, 1 vol. 8vo. A new work, preparing, 1848.  
 Thomson on the Sick Room, &c., 1 vol. large 12mo., 360 pages, cuts.  
 Watson's Principles and Practice of Physic, 3d edition by Coudie, 1 vol. 8vo., 1060 large pages.  
 West's Lectures on the Diseases of Infancy and Childhood. (Publishing in the Medical News and Library.)

### SURGERY.

- Brodie on Urinary Organs, 1 vol. 8vo., 214 pages.  
 Brodie on the Joints, 1 vol. 8vo., 216 pages.  
 Brodie's Lectures on Surgery, 1 vol. 8vo., 350 pp.  
 Brodie's Select Surgical Works, 780 pp. 1 vol. 8vo.  
 Chelius' System of Surgery, by South and Norris, in 3 large 8vo. vols., near 2200 pages, or in 17 parts at 50 cents each.  
 Cooper on Dislocations and Fractures, 1 vol. 8vo., 500 pages, many cuts.  
 Cooper on Hernia, 1 vol. imp. 8vo., many plates.  
 Cooper on the Testis and Thymus Gland, 1 vol. imperial 8vo., many plates.  
 Cooper on the Anatomy and Diseases of the Breast, Surgical Papers, &c. &c., 1 vol. imp. 8vo., pl'ts.  
 Druitt's Principles and Practice of Modern Surgery, 1 vol. 8vo., 576 pages, 193 cuts, 4th ed., now ready, (1848).  
 Dufton on Deafness and Disease of the Ear, 1 vol. 12mo., 120 pages.  
 Durlacher on Corns, Bunions, &c., 12mo., 134 pp.  
 Fergusson's Practical Surgery, 1 vol. 8vo., 3d edition (1848), 630 pages, 274 cuts.  
 Guthrie on the Bladder, 8vo., 150 pages.  
 Jones' (Wharton) Ophthalmic Medicine and Surgery, by Hays, 1 vol. royal 12mo., 529 pages, many cuts, and plates plain or colored.



- Liston's Lectures on Surgery, by Mütter, 1 vol. 8vo., 566 pages, many cuts.  
 Lawrence on the Eye, by Hays, new edition, much improved, 863 pages, many cuts & plates.  
 Lawrence on Ruptures, 1 vol. 8vo., 480 pages.  
 Miller's Principles of Surgery, 2d edition, 1 vol. 8vo., 538 pp., 1848.  
 Miller's Practice of Surgery, 1 vol. 8vo., 496 pp.  
 Maury's Dental Surgery, 1 vol. 8vo., 286 pages, many plates and cuts.  
 Robertson on the Teeth, 1 vol. 8vo., 230 pp., pts.  
 Sargent's Minor Surgery, 1 vol. royal 12mo., 380 pages, 128 cuts. A new work, 1848.

### MATERIA MEDICA AND THERAPEUTICS.

- Christison's New Dispensary, edited by Griffith, with additions from Gray's Supplement to the Pharmacopœias, and other sources, 1 large vol. 8vo., 216 cuts, over 1000 pages.  
 Dunglison's Materia Medica and Therapeutics, a new ed.; with cuts, 2 vols. 8vo., 986 pages.  
 Dunglison on New Remedies, 5th ed., 1 vol. 8vo., 653 pages.  
 Ellis' Medical Formulary, 8th ed., much improved, 1 vol. 8vo., 272 pages.  
 Griffith's Medical Botany, a new work, 1 large vol. 8vo., 704 pp., with over 350 illustrations.  
 Mayne's Dispensary and Formulary, by Griffith, 1 vol. 12mo., 330 pages. A new work.  
 Pereira's Materia Medica and Therapeutics, by Carson, 2d edition, 2 vols. 8vo., 1580 very large pages, nearly 300 wood-cuts.  
 Royle's Materia Medica and Therapeutics, by Carson, 1 vol. 8vo., 689 pages, many cuts.

### OBSTETRICS.

- Churchill's Theory and Practice of Midwifery, by Huston, 3d ed., 1 vol. 8vo., 526 pp., many cuts.  
 Dewees' System of Midwifery, 11th ed., 1 vol. 8vo., 660 pages, with plates.  
 Ramsbotham on Parturition, with many plates, 1 large vol. imperial 8vo., new and improved edition, 520 pages.

### CHEMISTRY AND HYGIENE.

- Brigham on Excitement, &c., 1 vol. 12mo., 204 pp.  
 Dunglison on Human Health, 2d ed., 8vo., 464 pp.  
 Fowne's Elementary Chemistry for Students, 2d ed., 1 vol. royal 12mo., 460 pages, many cuts.  
 Gardner's Manual of Medical Chemistry, 1 vol. 12mo., cuts. A new work, 1848, 400 pp.  
 Griffith's Chemistry of the Four Seasons, 1 vol. royal 12mo., 451 pages, many cuts.  
 Knapp's Chemical Technology, by Johnson, Vol. I., 8vo., 504 pp., 214 large cuts.  
 Practical Organic Chemistry, 18mo., paper, 25 cts.  
 Simon's Chemistry of Man, 8vo., 730 pp., plates.

Neill and Smith's Analytical Compend of Practical Medicine, Surgery, Anatomy, Midwifery, Diseases of Women and Children, Materia Medica and Therapeutics, Physiology, Chemistry and Pharmacy, with numerous illustrations, 1 vol. 12mo., 900 pages.

### NEW MEDICAL AND SCIENTIFIC BOOKS.

- LEA & BLANCHARD have in Preparation for early Publication,  
 - MacLise's Surgical Anatomy, plates.—Smith on Parturition.  
 - Sharpey and Quinn's Elements of Anatomy, edited by Joseph Leidy, M. D. In two handsome octavo volumes, with many wood-cuts.—Malgaigne's Operative Surgery, by Britain, in 1 vol. with cuts.  
 - Mohr and Redwood's Practical Pharmacy, with many illustrations, revised by W. Procter, Lecturer in the Philadelphia College of Pharmacy.—Griffith's Universal Formulary, 1 vol. 8vo.  
 - Meigs' New Work on Midwifery, with numerous woodcuts, 1 vol. 8vo.  
 - Churchill on the Management and more important Diseases of Infancy and Childhood, 1 vol. 8vo.  
 - Stillé's Elements of General Therapeutics, 1 vol. 8vo.—Golding Bird's Therapeutics.  
 - Carpenter's Comparative Anatomy and Physiology, revised by the author, with beautiful wood-cuts.  
 - West's Lectures on the Diseases of Infancy and Childhood. A New Work on Popular Medicine, 1 vol. 8vo. A Cyclopedia of Anatomy and Physiology, based on the large work of Todd, 1 vol. 8vo. illustrated.  
 - Todd and Bowman's Physiological Anatomy and Physiology of Man. To be complete in 1 vol. 8vo. with many cuts.—De la Beche's New Work on Geology, with numerous wood cuts.  
 - Knapp's Technology, or Chemistry Applied to the Arts and to Manufactures, edited by Johnson, Vol. II., 8vo., with many hundred illustrations.—Barlow on Medicine, 1 vol. 8vo.  
 - Weisbach's Mechanics Applied to Machinery and Engineering, edited by Johnson. Vol. II., with 500 illustrations.—Bowman's Practical Chemistry.  
 - Graham's Elements of Chemistry, edited by Bridges, 2d ed., 1 vol. 8vo., with several hundred illustrations.

With various other important Works.

- MEDICAL JURISPRUDENCE, EDUCATION, &c.**  
 Bartlett's Philosophy of Medicine, 1 vol. 8vo., 312 pages.  
 Dunglison's Medical Student, 2d ed. 12mo., 312 pp.  
 Man's Power over himself to Prevent or Control Insanity, 18mo., paper, price 25 cents.  
 Taylor's Medical Jurisprudence, by Griffith, 1 vol. 8vo., 540 pages.  
 Taylor on Poisons, by Griffith, 1 vol. 8vo., 688 pp.  
 Traill's Medical Jurisprudence, 1 vol. 8vo., 234 pp.

### NATURAL SCIENCE, &c.

- Arnott's Elements of Physics, new edition, 1 vol. 8vo., 484 pages, many cuts.  
 Ansted's Ancient World, Popular Geology, in 1 12mo. volume, with numerous cuts, 382 pages.  
 Bird's Natural Philosophy, 1 vol. royal 12mo., 402 pages and 372 woodcuts.  
 Brewster's Optics, 1 vol. 12mo. 423 pp. many cuts.  
 Babbage's "Fragment," 1 vol. 8vo., 250 pages.  
 Buckland's Geology and Mineralogy, 2 vols. 8vo., with numerous plates and maps.  
 Bridgewater Treatises, with many plates, cuts, maps, &c., 7 vols. 8vo., 3287 pages.  
 Carpenter's Popular Vegetable Physiology, 1 vol. royal 12mo., many cuts.  
 Dana on Corals, being vol. 8 of Ex. Expedition, royal 4to., extra cloth.  
 Hale's Ethnography and Philology of the U. S. Exploring Expedition, in 1 large imp. 4to. vol.  
 Herschel's Treatise on Astronomy, 1 vol. 12mo., 417 pages, numerous plates and cuts.  
 Introduction to Vegetable Physiology, founded on De Candolle, Lindley, &c., 18mo., paper, 25 cts.  
 Kirby on Animals, plates, 1 vol. 8vo., 520 pages.  
 Kirby and Spence's Entomology, from 6th London ed., 1 vol. 8vo., 600 large pages; plates plain or colored.  
 Müller's Physics and Meteorology, 1 vol. 8vo., 636 pp., with 540 woodcuts and 2 cold plates  
 Philosophy in Sport made Science in Earnest, vol. royal 18mo., 430 pages, many cuts.  
 Roget's Animal and Vegetable Physiology, with 400 cuts, 2 vols. 8vo., 872 pages.  
 Small Books on Great Subjects, 12 parts, done up in 3 handsome 12mo. volumes, extra cloth.  
 Somerville's Physical Geography, 12mo., cloth.  
 Weisbach's Mechanics applied to Machinery and Engineering, Vol. I. 8vo., 486 pp. 550 woodcuts.

### VETERINARY MEDICINE.

- Clater and Skinner's Farrier, 1 vol. 12mo., 220 pp.  
 Youatt's Great Work on the Horse, by Skinner, 1 vol. 8vo., 448 pages, many cuts.  
 Youatt and Clater's Cattle Doctor, 1 vol. 12mo., 282 pages, cuts.  
 Youatt on the Dog, by Lewis, 1 vol. demy 8vo., 403 pages, beautiful plates.  
 Youatt on the Pig, a new work with beautiful illustrations of all the different varieties, 12mo.



PROFESSOR MEIGS' NEW WORK.---Now Ready.

## FEMALES AND THEIR DISEASES; A SERIES OF LETTERS TO HIS CLASS.

BY C. D. MEIGS, M. D.,

Professor of Midwifery and the Diseases of Women and Children in the Jefferson Medical College, Philadelphia, &c. &c.

*In one large and beautifully printed octavo volume of six hundred and seventy pages.*

We think that Dr. M. has done to his class, and to the profession generally, a service for which they will be grateful, and for which he merits the approbation of all. He has endeavored to perform his task, he tells us, in a spirit of "freedom and abandon," very different from the dullness which has hitherto characterized medical writings; and we think he has succeeded in producing a very agreeable, amusing, clever and instructive book, which will be read with pleasure, and be likely to be impressive.—*N. Y. Annalist.*

He has evidently seen almost every form and variety of female disease, and not only seen, but observed and reflected, and if we may judge by the innate evidence afforded by the volume itself, practised successfully. His volume contains many practical hints and suggestions which will repay perusal.—*The Charleston Medical Journal and Review.*

The work is written in a free, animated conversational style, and is replete with sound practical instruction.—*The Western Lancet.*

We warmly commend the work of Professor Meigs as a highly interesting and instructive volume.—*N. Y. Journal of Medicine.*

The remaining affections of the womb, included in the volumes before us, are treated of very learnedly, and much valuable instruction is communicated concerning them. Dr. Meigs' views as to the nature and causes, of these affections are generally correct, while his long and extensive experience gives to his practical directions no trifling weight. The work contains a very large fund of valuable matter, and will, in all probability, become a very popular one.—*American Medical Journal, Jan. 1848.*

His great reputation, the change in the book from the usual manner of writing, and the intrinsic merits with which the work abounds, will give it a wide spread circulation, and a very general perusal.—*Northern and Western Medical and Surgical Journal.*

The style is certainly not faultless, but yet it is one which, we venture to believe, will prove acceptable to most of the readers to whom it is especially addressed. It is fresh, buoyant, varied and sprightly, and one is carried along by it without weariness.

"As to the doctrine and the precept of these letters," we think with the author, that "he had a right, at his time of life, to be heard upon them," and we are quite sure that he will be heard with great advantage. Whatever difference of opinion there may be respecting the manner of the letters, there can be no diversity as to the matter. They are full of instruction. It would be difficult to point to a volume containing more valuable information relative to females and their diseases.

We take leave of these Letters with the conviction that they will be productive of great good. They will be read with attention by many who would not have patience to wade through an elaborate, systematic treatise on diseases of females, and there is something in the dashing, random style which serves to impress their sentiments upon the memory. We do not undertake to say that the style is the best; it would probably be hazardous to assert that it is even a proper one for such a subject; but we must say, that it has contributed its share towards the pleasure with which we have read this volume.—*The Western Journal of Medicine and Surgery.*

MEIGS ON CHILDREN--Nearly Ready.

## ON CERTAIN DISEASES OF INFANTS.

BY C. D. MEIGS, M. D.

*In One Octavo Volume.*

New Edition.--Revised for this Country, 1848.

## THEORY AND PRACTICE OF MIDWIFERY.

BY FLEETWOOD CHURCHILL, M. D.,

Hon. Fellow of the Royal College of Physicians of Ireland, &c. &c.

WITH NOTES AND ADDITIONS

BY ROBERT M. HUSTON, M. D., &c.

*Third American Edition, Revised and Improved by the Author.*

WITH ONE HUNDRED AND TWENTY-EIGHT ILLUSTRATIONS.

*In one very handsome octavo volume.*

*Preface to the Third American Edition by the Author.*—I have been requested by the American publishers to revise this edition of my book, and to make such additions as the progress of science may have rendered necessary.

This I have done so far as time permitted; and though I confess that the work is far from being as complete as I could wish, yet I see no reason to modify or change the principles therein inculcated. An extended experience will of course, in all such cases, involve the insertion of new matter; and, owing to the industry of my friend Dr. Huston, I feel satisfied that few facts of importance have been omitted.

I owe a large debt of gratitude to my American friends, which I gladly take this opportunity of acknowledging, and also to the profession in America for the flattering reception they have given to my volumes. No reward could be more highly valued by me, nor could anything make me more anxious, by labor and study, to make my works as perfect as possible, than the knowledge that their usefulness may extend to another hemisphere.—Dublin, November, 1847.

As we have formerly called the attention of our readers to the extraordinary merits of this work, we need only add, that it continues to occupy the foremost rank among publications connected with the obstetric art. The author has added also to its utility by posting up all the new facts and observations which have transpired since the appearance of the last edition.—*N. Y. Journal of Medicine.*



Now Complete—THE GREAT SURGICAL LIBRARY.

# A SYSTEM OF SURGERY.

BY J. M. CHELIUS,

Doctor in Medicine and Surgery, Public Professor of General and Ophthalmic Surgery, &c. &c. in the University of Heidelberg.

TRANSLATED FROM THE GERMAN,

AND ACCOMPANIED WITH ADDITIONAL NOTES AND OBSERVATIONS,

BY JOHN F. SOUTH,

Surgeon to St. Thomas' Hospital.

EDITED, WITH REFERENCE TO AMERICAN AUTHORITIES,

BY GEORGE W. NORRIS, M. D.

*Now complete, in three large 8vo. volumes of nearly twenty-two hundred pages, or in 17 numbers, at 50 cents.*

This work has been delayed beyond the time originally promised for its completion, by the very extensive additions of the translator, and by the size of the very complete Index, extending to over 170 large pages in double columns. In answer to numerous inquiries, the publishers now have the pleasure to present it in a perfect state to the profession, forming three unusually large volumes, bound in the best manner, and sold at a very low price.

The most learned and complete systematic treatise now extant.—*Edinburgh Medical Journal.*

No work in the English language comprises so large an amount of information relative to operative medicine and surgical pathology.—*Medical Gazette.*

We have, indeed, seen no work which so nearly comes up to our idea of what such a production should be, both as a practical guide and as a work of reference, as this; and the fact that it has passed through six editions in Germany, and been translated into seven languages, is sufficiently convincing proof of its value. It is methodical and concise, clear and accurate; omitting all minor details and fruitless speculations, it gives us all the information we want in the shortest and simplest form.—*The New York Journal of Medicine.*

ENCYCLOPÆDIA OF MATERIA MEDICA.—Amplly Illustrated.

THE ELEMENTS OF

## MATERIA MEDICA AND THERAPEUTICS.

COMPREHENDING

THE NATURAL HISTORY, PREPARATION, PROPERTIES, COMPOSITION, EFFECTS AND USES OF MEDICINES.

BY JONATHAN PEREIRA, M. D., F. R. S. AND L. S.,

Member of the Society of Pharmacy of Paris; Examiner in Materia Medica and Pharmacy of the University of London; Lecturer on Materia Medica at the London Hospital, &c. &c.

*Second American, from the last London Edition, enlarged and improved.*

WITH NOTES AND ADDITIONS BY JOSEPH CARSON, M. D.

*In two volumes octavo, containing Fifteen Hundred very large pages, illustrated by Two Hundred and Seventy-five Wood-cuts.*

Notwithstanding the large size of this work, and the immense quantity of matter contained in its closely printed pages, it is offered at a price so low as to place it within the reach of all.

This encyclopædia of Materia Medica, for such it may justly be entitled, gives the fullest and most ample exposition of materia medica and its associate branches of any work hitherto published in the English language. It abounds in research and erudition; its statements of facts are clear and methodically arranged, while its therapeutic explanations are philosophical, and in accordance with sound clinical experience. It is equally adapted as a text-book for students, or a work of reference for the advanced practitioner, and no one can consult its pages without profit. The editor has performed his task with much ability and judgment. In the first American edition he adopted the Pharmacopœia of the United States, and the formulæ set forth in that standard authority; in the present he has introduced an account of substances that have recently attracted attention by their therapeutic employment, together with the mode of forming the characters and uses of new pharmaceutical preparations, and the details of more elaborate and particular chemical investigations, with respect to the nature of previously known and already described elementary principles; all the important indigenous medicines of the United States heretofore known are also described. The work, however, is too well known to need any further remark. We have no doubt it will have a circulation commensurate with its extraordinary merits.—*The New York Journal of Medicine.*

CONDIE ON CHILDREN—New Edition, 1847.

A PRACTICAL TREATISE ON

## THE DISEASES OF CHILDREN.

BY D. FRANCIS CONDIE, M. D.,

Fellow of the College of Physicians; Member of the American Philosophical Society, &c.

*Second Edition. In One large Octavo Volume.*

The publishers would particularly call the attention of the profession to an examination of this work, which has been extensively introduced as a text-book throughout the Union.

The best treatise on the diseases of children in the English language.—*Medical Examiner.*

A far more complete exposition of its subject than any other treatise on the diseases of children in the English language.—*American Medical Journal.*

*From Professor Pallen, of the University of St. Louis.*

"I consider it the best treatise on the diseases of children that we possess, and as such have been in the habit of recommending it as a text-book to my classes."

YEAR MANUALS FOR EXAMINATION  
NOW READY.

AN ANALYTICAL COMPENDIUM  
OF THE VARIOUS BRANCHES OF MEDICAL SCIENCE,  
FOR THE USE AND EXAMINATION OF STUDENTS.

BY JOHN NEILL, M. D.,

DEMONSTRATOR OF ANATOMY IN THE UNIVERSITY OF PENNSYLVANIA. LECTURER ON ANATOMY IN THE MEDICAL  
INSTITUTE OF PHILADELPHIA, ETC.

AND

FRANCIS GURNEY SMITH, M. D.,

LECTURER ON PHYSIOLOGY IN THE PHILADELPHIA ASSOCIATION FOR MEDICAL INSTRUCTION, ETC. ETC.

Forming One very large and handsomely printed Volume in royal duodecimo, of over Nine Hundred large pages, with about Three Hundred and Fifty Wood Engravings, strongly bound in leather, with raised bands.

The great progress of the Medical Sciences, and the increasing number and size of the standard text-books in the various departments of Medicine and Surgery, have created a necessity for Compendiums or Manuals, to assist the student in the prosecution of his labors, and the practitioner in refreshing his recollection of former studies.

The present work has been prepared solely to meet this want. No one could pretend to compress into a limited space all the information necessary to the student or practitioner; but the authors hope to have succeeded in embodying in its pages the elements of medical science; as much, indeed, as is compatible with its character as an analysis. While, therefore, the volume is not offered as a substitute for the ordinary text-books, or to lessen the necessity of regular attendance on lectures, or close office study, it can hardly fail to be of practical use in facilitating the acquisition of knowledge by the student. It is hoped, also, that the arrangement adopted will be found at once concise and intelligible, and that the mechanical execution of the work, its copious illustrations, and neat, cheap and compendious form, will prove all that can be desired by the student and practitioner.

To adapt it still further to the use of the student, the work is divided into seven portions, corresponding to the leading divisions of medical and surgical science. These are pagged separately, and may be had done up in stout covers, each being perfect in itself, and forming convenient volumes to carry in the pocket to the lecture room, or fitting them to be sent by mail. It will thus be seen that this work affords, at a price unprecedentedly low, a series of digests of the medical and surgical sciences, clearly and conveniently arranged, and forming a complete set of

HANDBOOKS FOR STUDENTS,

as follows:—

**ANATOMY;**

180 large pages, with 157 Illustrations.

Price 75 Cents.

**PHYSIOLOGY;**

134 pages, with 40 Illustrations.

Price 60 Cents.

**SURGERY;**

122 pages, with 51 Illustrations.

Price 60 Cents.

**OBSTETRICS;**

114 pages, with 37 Illustrations.

Price 50 Cents.

**MATERIA MEDICA AND  
THERAPEUTICS;**

116 pages, with 29 Illustrations.

Price 50 Cents.

**CHEMISTRY;**

94 pages, with 19 Illustrations.

Price 40 Cents.

**THE PRACTICE OF MEDICINE;**

152 pages, with 3 Illustrations.

Price 50 Cents.

Any one of which may be had separate; or, the whole will be done up and mailed, with the postage prepaid, or the remittance of \$4; or, if \$5 is remitted, The Medical News will be sent in addition.

It should be noticed that the amount of matter on a page is unusually large, thus making these Handbooks not only low priced, but extraordinarily CHEAP.



DISPENSATORY AND FORMULARY—Now Ready.

# A DISPENSATORY AND THERAPEUTICAL REMEMBRANCER, COMPRISING THE ENTIRE LISTS OF MATERIA MEDICA, WITH EVERY PRACTICAL FORMULA CONTAINED IN THE THREE BRITISH PHARMACOPŒIAS.

With Relative Tables subjoined, illustrating by upwards of 660 Examples,

THE EXTEMPORANEOUS FORMS AND COMBINATIONS SUITABLE FOR THE DIFFERENT MEDICINES.

BY JOHN MAYNE, M. D., L. R. C. S., EDIN., &amp;c. &amp;c.

Edited, with the addition of the Formulæ of the U. S. Pharmacopœia,

BY R. EGLESFELD GRIFFITH, M. D.,

Author of "Medical Botany," &amp;c.

In One Duodecimo Volume, of over three hundred large pages.

There is no work before the Profession, presenting in the same compass what the author and editor have attempted to embrace in this little volume—namely an *unabridged practical formulary* of the three British Pharmacopœias, and that of the United States; and this in addition to a full amount of collective information as to the uses of the different medicines, and other important points relating to remedial means and appliances.

The various advantages derivable from possession of a clear and *comparative* view—such as is herein submitted—of the official preparations directed by the high authorities referred to, are self-evident, and must be appreciated by the prescriber as well as the dispenser of medicines.

Another feature of originality, which it is expected will prove highly serviceable, is the introduction, wherever deemed requisite, of extemporaneous formulæ into the work. These are separated from the pharmacopœial or continuous text of each page in the form of foot-notes; and it need scarcely be explained, are intended to assist the practitioner's memory, by suggestions of forms and combinations most suitable for the medicinal substances to which they are annexed.

MR DEAR MAYNE:—I have looked over the proofs. Your little work will be exceedingly useful. I shall be very glad to see a copy of it, and to notice my name as you propose to place it. Believe me, &c. &c.

ROBERT LISTON.

CLIFFORD ST., NOV. 3, 1847.

The neat typography, convenient size, and low price of this volume, recommend it especially to physicians, apothecaries and students in want of a pocket manual.

## SARGENT'S MINOR SURGERY—A New Work, 1848.

### ON BANDAGING, AND OTHER POINTS OF MINOR SURGERY.

BY F. W. SARGENT, M. D.

In one handsome volume, royal 12mo., with nearly 400 Pages, and 123 Wood-cuts.

#### CONTENTS.

PART I—Chapter 1, Instruments used in Dressing. Chapter 2, Surgical Dressings. Chapter 3, General Rules for Dressing. Chapter 4, On the use of Water (Irrigation, Douche, Bathing, Water and Vapor Baths), Fumigation, and Disinfecting Agents.

PART II—*Bandages and their Application.* Chapter 1, The Roller or Simple Bandage; Compound Bandages; M. Mayer's System of Bandaging. Chapter 11, Regional Bandaging, (head and neck, trunk, upper extremity, lower extremity.)

PART III—*Bandages and Apparatus for the Treatment of Fractures.* Chapter 1, General Considerations. Chapter 2, Fractures of the Bones of the Head and Trunk. Chapter 3, Fractures of the Bones of the Shoulder. Chapter 4, Fractures of the Humerus, Forearm, Wrist and Hand. Chapter 5, Fractures of the Bones of the Lower Extremity.

PART IV—*Mechanical means employed in the Treatment of Dislocations.* Chapter 1, Bones of the Head and Trunk. Chapter 2, Bones of the Upper Extremity. Chapter 3, Bones of the Lower Extremity. Chapter 4, Compound Dislocations.

PART V—*Minor Surgical Operations.* Chapter 1, Blood-letting, (General and Topical Bleeding.) Chapter 2, Modes of effecting Counter-irritation, (Rube-facients, Vesicant, Suppurative Counter-irritants.) Chapter 3, Modes of Arresting Hemorrhage. Chapter 4, Dressing of Wounds. Chapter 5, Introduction of the Catheter. Chap. 6, Administration of Injections; Means of Diminishing Pain during Operations. Appendix of Formulæ.

## LIBRARY OF OPHTHALMIC MEDICINE AND SURGERY—Brought up to 1847.

### A TREATISE ON THE DISEASES OF THE EYE.

BY W. LAWRENCE, F. R. S.,

Surgeon Extraordinary to the Queen; Surgeon to St. Bartholomew's Hospital, &amp;c. &amp;c.

A NEW EDITION,

With many Modifications and Additions, and the Introduction of nearly Two Hundred Illustrations.

BY ISAAC HAYS, M. D.

Surgeon to Wills' Hospital; Physician to the Philadelphia Orphan Asylum, &amp;c. &amp;c.

In one very large octavo volume of near 900 pages, with 12 plates and numerous wood-cuts through the text. This is among the largest and most complete works on this interesting and difficult branch of Medical Science.

ATLAS OF ANATOMY, for the Medical Student.

*Price only Five Dollars, in parts.*

## AN ANATOMICAL ATLAS

ILLUSTRATIVE OF THE STRUCTURE OF THE HUMAN BODY.

BY HENRY H. SMITH, M.D.,

Fellow of the College of Physicians, &c.

UNDER THE SUPERVISION OF

WILLIAM E. HORNER, M.D.,

Professor of Anatomy in the University of Pennsylvania

*In One large Volume, Imperial Octavo.*

This work consists of five parts, whose contents are as follows:

PART I. The Bones and Ligaments, with one hundred and thirty engravings.

PART II. The Muscular and Dermoid Systems, with ninety-one engravings.

PART III. The Organs of Digestion and Generation, with one hundred and ninety-one engravings.

PART IV. The Organs of Respiration and Circulation, with ninety-eight engravings.

PART V. The Nervous System and the Senses, with one hundred and twenty-six engravings.

Forming altogether a complete System of Anatomical Plates, of nearly SIX HUNDRED AND FIFTY FIGURES, executed in the best style of art, and making one large imperial octavo volume. Those who do not want it in parts can have the work bound in extra cloth or sheep at an extra cost.

HORNER'S ANATOMY, New Edition.

## SPECIAL ANATOMY AND HISTOLOGY.

BY WILLIAM E. HORNER, M.D.,

Professor of Anatomy in the University of Pennsylvania, &c. &c.

SEVENTH EDITION.

*With many improvements and additions. In two octavo volumes, with illustrations on wood.*

The name of Professor Horner is a sufficient voucher for the fidelity and accuracy of any work on anatomy; but if any further evidence could be required of the value of the present publication, it is afforded by the fact of its having reached a seventh edition. It is altogether unnecessary now to inquire into the particular merits of a work which has been so long before the profession, and is so well known as the present one, but in announcing a new edition, it is proper to state that it has undergone several modifications, and has been much extended, so as to place it on a level with the existing advanced state of anatomy. The histological portion has been remodelled and rewritten since the last edition; numerous wood-cuts have been introduced, and specific references are made throughout the work to the beautiful figures in the Anatomical Atlas, by Dr. H. H. Smith.—*The American Medical Journal for January 1847.*

HORNER'S DISSECTOR.

## THE UNITED STATES DISSECTOR;

BEING A NEW EDITION, WITH EXTENSIVE MODIFICATIONS, AND ALMOST REWRITTEN, OF

"HORNER'S PRACTICAL ANATOMY."

*In One very neat Volume, royal 12mo., with many Illustrations on Wood.*

Anything emanating from the pen of Professor Horner, on anatomical science, is sure to be at once clear and correct. For more than 20 years this valuable little work has been before the profession, and during that period, sustained the high reputation of its author as a great practical anatomist. It is at the same time concise and simple in its arrangement, beginning with the alphabet of the science, and gradually leading the student onward to the more ample part of the study. Every student who wishes to acquire a correct knowledge of Anatomy, should have a copy of this book spread before him on the dissecting table.—*The New Orleans Medical and Surgical Journal.*

Much Enlarged Edition—Now Ready.

THE HISTORY, DIAGNOSIS AND TREATMENT

OF THE

## FEVERS OF THE UNITED STATES.

BY ELISHA BARTLETT, M.D.,

Professor of the Theory and Practice of Physic in the Medical Department of Transylvania University, &c.

*In One Octavo Volume of 550 Pages, beautifully printed and strongly bound.*

Decidedly the most valuable treatise on Fevers with which we are acquainted. As its title indicates, it contains the "History, Diagnosis and Treatment of the Fevers of the United States," comprehending Typhoid, Typhus, Periodical and Yellow Fevers. The work is remarkably systematic, and written in a clear, perspicuous and easy style. It is eminently calculated to be useful to the profession, and cannot fail to secure to its able author a European reputation, as well as to reflect credit upon the medical literature of our country.—*Southern Medical and Surgical Journal.*



## DUNGLISON'S PRACTICE OF MEDICINE,

Enlarged and Improved Edition, Brought up to 1848.

# THE PRACTICE OF MEDICINE;

A TREATISE ON  
SPECIAL PATHOLOGY AND THERAPEUTICS.

THIRD EDITION.

By ROBLEY DUNGLISON, M. D.,

*Professor of the Institutes of Medicine in the Jefferson Medical College; Lecturer on Clinical Medicine, &c.*

In Two Large Octavo Volumes of Fifteen Hundred Pages.

Professor Dunglison's work has rapidly passed to the third edition, and is now presented to the profession as probably the most complete work on the Practice of Medicine that has appeared in our country. It is especially characterized by extensive and laborious research, minute and accurate pathological, semeiological and therapeutical descriptions, together with that fullness of detail which is so important to the student.

The present edition has been considerably enlarged; indeed the indefatigable author seems to have explored all of the labyrinths of knowledge, from which important facts and opinions could be gleaned, for the instruction of his readers. We cheerfully commend the work to those who are not already familiar with its merits.

It is certainly the most complete treatise of which we have any knowledge. There is scarcely a disease which the student will not find noticed.—*Western Journal of Medicine and Surgery.*

One of the most elaborate treatises of the kind we have.—*Southern Medical and Surg. Journal.*

The work of Dr. Dunglison is too well known, to require at our hands, at the present time, an analysis of its contents, or any exposition of the manner in which the author has treated the several subjects embraced in it. The call for a third edition within five years from the appearance of the first, is, of itself, a sufficient evidence of the opinion formed of it by the medical profession of our country. That it is well adapted as a text-book for the use of the student, and at the same time as a book of reference for the practitioner, is very generally admitted; in both points of view, for accuracy and completeness, it will bear a very advantageous comparison with any of the numerous contemporary publications on the practice of medicine, that have appeared in this country or in Europe. The edition before us bears the evidence of the author's untiring industry, his familiarity with the various additions which are constantly being made to our pathological and therapeutical knowledge, and his impartiality in crediting the general sources from which his materials have been derived. Several pathological affections, omitted in the former editions, are inserted in the present, while every portion of the work has undergone a very thorough revision. It may with truth be said, that nothing of importance that has been recorded since the publication of the last edition, has escaped the attention of the author; the present edition may, therefore, be regarded as an adequate exponent of the existing condition of knowledge on the important departments of medicine of which it treats.—*The American Journal of the Medical Sciences*, Jan. 1848.

The Physician cannot get a better work of the kind than this, and when he masters its contents, he will have mastered all that such treatises can afford him.—*St. Louis Med. & Surg. Journal*, June 1848.

## DUNGLISON ON NEW REMEDIES.

NEW EDITION.

## NEW REMEDIES.

BY ROBLEY DUNGLISON, M. D., &amp;c. &amp;c.

*Fifth edition, with extensive additions. In one neat octavo volume.*

A work like this is obviously not suitable for either critical or analytical review. It is, so far as it goes, a dispensatory, in which an account is given of the chemical and physical properties of all the articles recently added to the *Materia Medica* and their preparations, with a notice of the diseases for which they are prescribed, the doses, mode of administration, &c.—*The Medical Examiner.*

## THE MEDICAL STUDENT, OR AIDS TO THE STUDY OF MEDICINE.

A REVISED AND MODIFIED EDITION.

BY ROBLEY DUNGLISON, M. D.

*In one neat 12mo. volume.*

## HUMAN HEALTH;

Or, the Influence of Atmosphere and Locality, Change of Air and Climate, Seasons, Food, Clothing, Bathing and Mineral Springs, Exercise, Sleep, Corporal and Intellectual Pursuits, &c. &c. on Healthy Man: Constituting

ELEMENTS OF HYGIENE.

BY ROBLEY DUNGLISON, M. D.

*A New Edition with many Modifications and Additions. In one Volume, 8vo.*

THE GREAT AMERICAN MEDICAL DICTIONARY,  
NEW AND ENLARGED EDITION,  
BROUGHT UP TO SEPTEMBER, 1848.

NOW READY,  
MEDICAL LEXICON;  
A DICTIONARY OF MEDICAL SCIENCE,

CONTAINING

A CONCISE EXPLANATION OF THE VARIOUS SUBJECTS AND TERMS, WITH  
THE FRENCH AND OTHER SYNONYMS; NOTICES OF CLIMATE  
AND OF CELEBRATED MINERAL WATERS;  
FORMULÆ FOR VARIOUS OFFICINAL AND EMPIRICAL PREPARATIONS,  
ETC.

BY ROBLEY DUNGLISON, M. D.,

PROFESSOR OF THE INSTITUTES OF MEDICINE IN THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA,  
ETC. ETC.

SEVENTH EDITION,  
CAREFULLY REVISED AND GREATLY ENLARGED,

*In One very large and beautifully printed Octavo Volume of over Nine Hundred Pages, closely printed  
in double columns. Strongly bound in leather, with raised bands.*

Since its first publication, many years since, this work has been steadily advancing in reputation and increasing in favor with the profession, till it may now safely be pronounced

THE STANDARD AMERICAN MEDICAL DICTIONARY.

Never having been stereotyped, the author has been able, in the successive reprints, to embody all the novelties and improvements of science as fast as they have appeared, to accomplish which great industry as well as great judgment, has been necessary. As an exemplification of the manner in which this work is kept up to the day, it may be stated that this edition contains

OVER SIX THOUSAND WORDS AND TERMS

not embraced in the preceding, which, in its turn, had

TWO THOUSAND FIVE HUNDRED

more than the Fifth Edition. The profession, therefore, can understand the manner in which this work has gradually increased until it contains satisfactory definitions of

OVER FORTY-FIVE THOUSAND WORDS.

Thus becoming a vast reservoir of medical Science in all its branches. It will thus be seen why it is regarded as the

STANDARD WORK OF REFERENCE FOR THE MEDICAL PROFESSION.

Every means has been employed in the preparation of the present edition, to render its mechanical execution and typographical accuracy in every way worthy its extended reputation and universal use. The size of the page has been enlarged, and the work itself increased more than a hundred pages; the press has been watched with great care; a new font of type has been used, procured for the purpose; and the whole printed on fine clear white paper, manufactured expressly. Notwithstanding this marked improvement over all former editions, the price is retained at the original low rate, placing it within the reach of all who may have occasion to refer to its pages.

From among numerous notices of former editions, the publishers append a few.

The most complete Medical Dictionary in the English language.—*Western Lancet.*

We but express the general opinion when we say that Dr. Dunglison's Dictionary has not its superior, if indeed, its equal, in the English language. So much for the preceding editions. The present is, of course, an improvement on its predecessors, and contains all the new terms employed by advancing science. We heartily recommend this Dictionary to medical men, as they will be able to find in it almost every term used in the medical and collateral sciences, and almost every topic embraced by these long and voluminous annals.

It is a work destined to constitute the proudest monument of its author's industry and learning—to perpetuate through coming centuries the memory of his name and his services to science—to reflect honor on American medicine.—*St. Louis Med. and Surg. Journal.*

The Dictionary of Professor Dunglison might, without any great stretch of propriety, be called a Cyclopedia of Medical Science, so comprehensive is it in its scope, and so minute in its details. In this respect it possesses a great advantage over its contemporary publications of the kind. Whatever one may expect to meet with in a dictionary of terms, he is pretty sure to find in its ample pages. Besides a vast deal of matter not commonly embraced in medical lexicons, and not readily found in other publications.—*The Medical Examiner.*



A NEW EDITION OF DUNGLISON'S HUMAN PHYSIOLOGY.

**HUMAN PHYSIOLOGY.**

WITH THREE HUNDRED AND SEVENTY ILLUSTRATIONS.

BY ROBLEY DUNGLISON, M. D.,

PROFESSOR OF THE INSTITUTES OF MEDICINE IN THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA, ETC. ETC.

Sixth edition, greatly improved.—In two large octavo volumes, containing nearly 1350 pages.

This work has been so long received throughout the Union as the leading text-book on Physiology, that in presenting this edition the publishers deem it necessary only to remark that they have endeavored to render the mechanical execution of the work in some degree worthy its acknowledged merits by an advance in both the number and beauty of the illustrations, and an improvement in the style of printing. The name of the author is sufficient guarantee that each new edition fully keeps pace with the advance of science.

DUNGLISON'S THERAPEUTICS—New and Much Improved edition.

**GENERAL THERAPEUTICS AND MATERIA MEDICA.**

With One Hundred and Twenty Illustrations.

ADAPTED FOR A MEDICAL TEXT-BOOK.

BY ROBLEY DUNGLISON, M. D.,

Professor of Institutes of Medicine, &c. in Jefferson Medical College; late Professor of Materia Medica, &c. in the Universities of Virginia and Maryland, and in Jefferson Medical College.

Third Edition, Revised and Improved, in Two Octavo Volumes, well bound.

Our junior brethren in America will find in these volumes of Professor Dunglison a "THESAURUS MEDICAMINUM" more valuable than a large purse of gold.—*London Medico-Chirurgical Review.*

GRIFFITH'S UNIVERSAL FORMULARY—Nearly Ready.

**THE UNIVERSAL FORMULARY:**

A SYNOPSIS OF THE PHARMACOPŒIAS, DISPENSATORIES AND FORMULARIES OF EUROPE AND AMERICA.

WITH NUMEROUS MAGISTERIAL FORMULAS FROM VARIOUS SOURCES.

BY R. E. GRIFFITH, M. D., &amp;c. &amp;c.,

Author of "Medical Botany," &amp;c. &amp;c.

In One Octavo Volume.

This work is intended to embrace all that is of practical importance in the numerous Pharmacopœias, Formularies and Dispensatories of Europe, and of this country, as well as such formulas as appeared deserving of notice in the Medical Journals, Treatises of Medicine, &c. &c. together with many others, derived from private sources, which have never been hitherto published. It will therefore include all that is really useful in Redwood's Edition of Gray's Supplement to the Pharmacopœias, in Jourdan's Pharmacopœie, and the several works of Ellis, Fee, Paris, Thomson, Beasley, Coicrean, Cooley, Bouchardat, &c. As, in accordance with its title of a Universal Formulary, it will not be confined solely to medical formulas, the publishers hope that the numerous scientific receipts embraced, will render it of much practical importance to the CHEMIST and MANUFACTURER. It will contain

UPWARDS OF SIX THOUSAND FORMULAS,

alphabetically arranged, with copious indexes, pointing out the diseases in which the preparations are to be used, &c. &c., and thus combining the advantages of all the different modes of arrangement and reference.

NEW AND COMPLETE MEDICAL BOTANY—Lately Published.

**MEDICAL BOTANY;**

OR, A DESCRIPTION OF ALL THE MORE IMPORTANT PLANTS USED IN MEDICINE, AND OF THEIR PROPERTIES, USES AND MODES OF ADMINISTRATION.

BY R. EGLESFELD GRIFFITH, M. D., &amp;c. &amp;c.

In One large Octavo Volume, handsomely printed, with nearly Three Hundred and Fifty Illustrations on Wood.

The author of the volume is well known to be particularly qualified for this undertaking, by his botanical, as well as medical and pharmaceutical knowledge; and it strikes us, on cursory examination, that it has been prepared with much care and faithfulness, and that it will take its place at once as the standard work on the subject in this country. A succinct introductory chapter is devoted to the anatomy and structure of plants, their classical composition and products, and the outlines of classification. The official plants are introduced under their several natural orders, which, with the general systematic arrangement of De Candolle, are thrown into groups after the manner of Dr. Lindley. The plants which are really important in the Materia Medica are described in full, as well as the official part or production; the others are more briefly noticed; and the references, which are faithfully made, both to the botanical and medical authorities, will serve in all cases to direct the inquirer to the original sources of information.—*Silliman's Journal.*

A NEW DISPENSATORY,

NOW READY.

A DISPENSATORY,

OR

COMMENTARY ON THE PHARMACOPŒIAS OF GREAT BRITAIN  
AND THE UNITED STATES:

COMPRISING

THE NATURAL HISTORY, DESCRIPTION, CHEMISTRY, PHARMACY, ACTIONS, USES  
AND DOSES OF THE ARTICLES OF THE MATERIA MEDICA.

BY ROBERT CHRISTISON, M. D., V. P. R. S. E.,

PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, PROFESSOR OF MATERIA MEDICA IN THE  
UNIVERSITY OF EDINBURGH, ETC.

Second Edition, Revised and Improved,

WITH A SUPPLEMENT CONTAINING THE MOST IMPORTANT NEW REMEDIES.

WITH COPIOUS ADDITIONS,

AND TWO HUNDRED AND THIRTEEN LARGE WOOD ENGRAVINGS,

BY R. EGLESFELD GRIFFITH, M. D.,

AUTHOR OF "A MEDICAL BOTANY," ETC.

SPECIMEN OF THE ILLUSTRATIONS.



*Artemisia Absinthium*, "Wormwood."

*In One very large and handsome Octavo Volume of over One Thousand closely printed Pages, with numerous Wood-cuts, beautifully printed, on fine white paper.*

Presenting an immense quantity of matter at an unusually low price.



**CHRISTISON AND GRIFFITH'S DISPENSATORY--Continued.**

The Dispensatory of Professors Wood & Bache has so long and so satisfactorily supplied the wants of the profession that the publishers, in presenting a new work of the same description, feel that it should possess additional attractions to entitle it to notice. The value of the original work of Dr. Christison is well known in England, where it has long occupied a position similar to that of the U. S. Dispensatory in this country. To this it is entitled by its clearness, conciseness, and completeness, and the care with which the author has kept it on a level with the improvements of medical science, by corrections, and embodying in it all the new articles of the *materia medica*, &c. In preparing it for the use of the profession in this country, Dr. Griffith has made very extensive additions, introducing all the processes of the U. S. Pharmacopœia, as well as a full medical, pharmaceutical and botanical history of all articles recognized by our national standard which have been omitted by the author. In addition to this, the editor has made free use of all European and American authorities on *Materia Medica*, among which may more particularly be mentioned Redwood's Second Edition of Gray's Supplement to the Pharmacopœia, just issued, which has supplied him with much useful information, and from which he has endeavored to convey all that appeared to him to possess especial interest—among other things, some very extended and useful tables, and accounts of various new remedial agents not as yet mentioned in the Pharmacopœias of Great Britain or of this country. In addition to this, over two hundred wood-cuts have been introduced, illustrative of articles of the *Materia Medica*, rendering this the only Dispensatory now before the profession presenting illustrations of the principal articles described therein.

*The attention of practitioners and students, as well as of all druggists and pharmacutists, is especially invited to this work as one embodying in the smallest practicable space and at an exceedingly low price, an immense amount of indispensable information, and as presenting a complete view of the present practical state of the materia medicas of the four leading pharmacopœias, clearly arranged and concisely expressed.*

From T. ROMEYN BECK, M.D., Prof. of Mat. Med. in the Albany Medical College, and author of "Medical Jurisprudence."

Albany, Sept. 8, 1848.

"I received from you this morning a copy of the Second Edition of Christison's Dispensatory, edited by Griffith. I beg you to receive my thanks for this most acceptable present.

"I have been a diligent reader of the first edition and know its value. I only regret that the Circular of our College has been published, or I would have placed it among my text-books. Next spring I will certainly do so if I live and hold the professorship."

From W. T. WILSON, M.D., Prof. of Mat. Med. in the Washington University of Baltimore.

Baltimore, Aug. 31, 1848.

"Allow me to thank you most sincerely and cordially for your kind present of a copy of Christison and Griffith's Dispensatory, just published by you. After a cursory glance at the volume, which I shall peruse more at leisure hereafter, I most heartily join in your opinion in regard to its great merits, containing, as it does, all the most modern discoveries and improvements in the *materia medica* and pharmacy, and rendered still more acceptable to the American profession by its beautiful illustrations, the addition of Dr. Griffith, and the handsome style in which you have succeeded in bringing it out. I trust that your enterprise will be liberally responded to by those for whom the work is chiefly intended."

There is not in any language a more complete and perfect Treatise.—*N. Y. Annalist*, Sept., 1848.

It is not needful that we should compare it with the other pharmacopœias extant, which enjoy and merit the confidence of the profession: it is enough to say that it appears to us as perfect as a Dispensatory, in the present state of pharmaceutical science, could be made. If it omits any details pertaining to this branch of knowledge which the student has a right to expect in such a work, we confess the omission has escaped our scrutiny.

We cordially recommend this work to such of our readers as are in need of a Dispensatory. They cannot make choice of a better.—*The Western Journal of Medicine and Surgery*, September, 1848.

In conclusion, we need scarcely say that we strongly recommend this work to all classes of our readers. As a Dispensatory and commentary on the Pharmacopœias, it is unrivalled in the English or any other language.—*The Dublin Quarterly Journal*, July 1848.

We earnestly recommend Dr. Christison's Dispensatory to all our readers, as an indispensable companion, not in the Study only, but in the Surgery also.—*British and Foreign Medical Review*.

It is exactly the work we would give to the student for daily reading, or to the practitioner for regular reference. Without being encumbered with unnecessary detail or research, it is sufficiently explicit in its literature to render it an ample encyclopedia of its subject; and at the same time, its practical information is so condensed and summary, yet without a sacrifice of even the least important fact, that to the student it cannot but be a text-book invaluable in its kind.

Had we said less concerning this volume we should have been wanting in common duty; but it is not necessary that we should say more to convince our numerous readers that we consider Christison's Dispensatory to be the best English work extant upon the subject it embraces.—*The Medical Times*, June 1848.

It comes not within our plan to enter into minute or detailed criticism of a work like the present. Its merits as a treatise on *materia medica*, chemical pharmacy, and pharmacology, we on a former occasion explained. It is sufficient to say that the reader will find the character given in that article most ably sustained by the present edition. The natural and chemical history of the articles is given with great clearness and accuracy. The important subject of adulterations and sophistications is throughout treated in detail. The pharmacological instructions show very great practical experience and knowledge, which can be obtained by experience alone. And lastly, the therapeutic directions are expounded in a judicious manner, avoiding the extremes of great confidence and unreasonable skepticism. In short, the work may be justly recommended as an excellent treatise on *Materia Medica*, Chemical Pharmacy, and Pharmacology.—*The Edinburgh Medical and Surgical Journal*, July 1848.

**BARTLETT ON CERTAINTY IN MEDICINE—Now Ready.****AN INQUIRY INTO THE DEGREE OF CERTAINTY IN MEDICINE, AND INTO THE NATURE AND EXTENT OF ITS POWER OVER DISEASE.**

BY ELISHA BARTLETT, M. D.,

AUTHOR OF "FEVERS OF THE UNITED STATES," "PHILOSOPHY OF MEDICAL SCIENCE."

In One small Volume, crown 8vo, extra cloth.

## FOWNES' CHEMISTRY FOR STUDENTS.

A NEW AND IMPROVED EDITION.

**ELEMENTARY CHEMISTRY,**

THEORETICAL AND PRACTICAL.

BY GEORGE FOWNES, Ph. D.,

Chemical Lecturer in the Middlesex Hospital Medical School, &amp;c. &amp;c.

With Numerous Illustrations. Second American Edition. Edited, with Additions,

BY ROBERT BRIDGES, M. D.,

Professor of General and Pharmaceutical Chemistry in the Philadelphia College of Pharmacy, &amp;c. &amp;c.

*In one large duodecimo volume, sheep or extra cloth.*

Though this work has been so recently published, it has already been adopted as a text-book by many of the Medical Institutions throughout the country. As a work for the first class student, and as an introduction to the larger systems of Chemistry, such as Graham's, there has been but one opinion expressed concerning it, and it may now be considered as

**THE TEXT-BOOK FOR THE CHEMICAL STUDENT.**

An admirable exposition of the present state of chemical science, simply and clearly written, and displaying a thorough practical knowledge of its details, as well as a profound acquaintance with its principles. The illustrations, and the whole getting-up of the book, merit our highest praise.—*British and Foreign Med. Rev.*

Remarkable for its clearness, and the most concise and perspicuous work of the kind we have seen, admirably calculated to prepare the student for the more elaborate treatises.—*Pharmaceutical Journal.*

From JAMES RENWICK, *Professor of Chemistry, Columbia College, New York.*

"The very best manual of Chemistry with which I am acquainted in the English language."

New York, Feb. 12th, 1848.

This work of Fownes, while not enlarging on the subject as much as Graham, is far more lucid and expanded than the usual small introductory works. Professors recommending it to their classes may rely upon its being kept up to the day by frequent revisions.

**MANUALS ON THE BLOOD AND URINE:**

CONSISTING OF

I. A PRACTICAL MANUAL, CONTAINING A DESCRIPTION OF THE GENERAL, CHEMICAL AND MICROSCOPICAL CHARACTERS OF THE BLOOD AND SECRETIONS OF THE HUMAN BODY,

AS WELL AS OF THEIR COMPOUNDS, INCLUDING BOTH THEIR HEALTHY AND DISEASED STATES: WITH THE BEST METHODS OF SEPARATING AND ESTIMATING THEIR INGREDIENTS. ALSO, A SUCCINCT ACCOUNT OF THE VARIOUS CONCRETIONS OCCASIONALLY FOUND IN THE BODY AND FORMING CALCULI.

BY JOHN WILLIAM GRIFFITH, M. D., F. L. S., &amp;c.

II. ON THE ANALYSIS OF THE BLOOD AND URINE IN HEALTH AND DISEASE, AND ON THE TREATMENT OF URINARY DISEASES.

BY G. OWEN REES, M. D., F. R. S., &amp;c. &amp;c.

III. A GUIDE TO THE EXAMINATION OF THE URINE IN HEALTH AND DISEASE, FOR THE USE OF STUDENTS.

BY ALFRED MARKWICK.

The whole forming One large royal 12mo. Volume, of Four Hundred and Sixty Pages,

*With about one hundred figures on five plates.*

The three works embraced in the volume were published in London, separately, but the immediate connection of the subjects treated, and their increasing importance, have induced the American publishers to embody them in a volume suitable for reference and preservation.

Although addressed especially to students, it contains almost all the information upon these matters which the practitioner requires.—*Dublin Medical Press.*

The chemical processes recommended are simple, yet scientific; and the work will be very useful to the medical alumni for whom it is intended.—*Medical Times.*

The author must be admitted to have attained his object in presenting a convenient bedside companion.—*Dr. Ranking's Abstract.*

CHURCHILL ON FEMALES—Edition of 1847.

**THE DISEASES OF FEMALES,**  
INCLUDING THOSE OF PREGNANCY AND CHILD-BED.

BY FLEETWOOD CHURCHILL, M. D.,

Author of "Theory and Practice of Midwifery," &amp;c. &amp;c.

FOURTH AMERICAN, FROM THE SECOND LONDON EDITION, WITH ILLUSTRATIONS.

EDITED, WITH NOTES,

BY ROBERT M. HUSTON, M. D., &amp;c. &amp;c.

*In One Volume, Octavo.*

The rapid sale of three editions of this valuable work stamps it so emphatically with the approbation of the profession of this country, that the publishers, in presenting a fourth, deem it merely necessary to observe, that every care has been taken, by the editor, to supply any deficiencies which may have existed in former impressions, and to bring the work fully up to the date of publication.



New and Enlarged Edition, Brought up to 1848.

**WILLIAMS' PATHOLOGY.** Now Ready.

# PRINCIPLES OF MEDICINE,

COMPRISING

## GENERAL PATHOLOGY AND THERAPEUTICS,

AND A BRIEF GENERAL VIEW OF

ETIOLOGY, NOSOLOGY, SEMEIOLOGY, DIAGNOSIS, PROGNOSIS,  
AND HYGIENICS.

BY CHARLES J. B. WILLIAMS, M. D., F. R. S.,

Fellow of the Royal College of Physicians, &c.

EDITED, WITH ADDITIONS, BY MEREDITH CLYMER, M. D.,

Consulting Physician to the Philadelphia Hospital, &c. &c.

*Third American, from the Second and Enlarged London Edition.*

In One Volume Octavo.

The delay which has prevented the appearance of this edition until the present time, has arisen from the extensive modifications and improvements introduced by the author, bringing the work fully up to a level with the present state of knowledge on the numerous and important subjects of which he treats. These additions pervade almost every portion of the work, but they preponderate in the following subjects, in which we can mention—in ETIOLOGY, *mechanical, chemical, and dietetic causes of diseases, defective cleanliness, ventilation and drainage.* In PATHOLOGY, *the tabular views of the elements of disease; reflex action and sympathy; elementary changes in the blood; congestion; determination of blood; inflammation, in its nature, manifold results, and modes of treatment; degeneration of textures; cacoplastic and aplastic deposits and their treatment, with a notice of the action of cod liver oil; and the whole chapter on HYGIENICS, comprising food; clothing, air and temperature; exercise; sleep; mental occupation and excretion.* In addition to this, the editor has introduced much new matter in the sections on ETIOLOGY, DISEASES OF THE CONSTITUENTS OF THE BLOOD, STRUCTURAL DISEASES, SEMEIOLOGY, PROGNOSIS AND HYGIENICS, and he has also added a section on the SIGNS OF DISEASE.

It will be seen from this rapid summary, that the additions to this edition of Dr. Williams' Principles will fully maintain its high reputation, and render it worthy a continuance of the favor which has caused its introduction as a text-book into so many colleges throughout the Union.

It is entitled to claim the reader's best attention, and its perusal and study will be amply remunerative. It is a work calculated to elevate the character of medical science, from its correct and lucid exposition of the great principles of scientific investigation, and its plain, practical character, will recommend it to the student and practitioner of medicine and surgery.—*Am. Medical Journal*, July 1848.

ROYLE'S NEW WORK.

## MATERIA MEDICA AND THERAPEUTICS;

INCLUDING THE PREPARATIONS OF THE PHARMACOPŒIAS OF LONDON, EDINBURGH,  
DUBLIN, AND OF THE UNITED STATES,

WITH MANY NEW MEDICINES.

BY J. FORBES ROYLE, M. D., F. R. S.

Late of the Medical Staff in the Bengal Army, Professor of Materia Medica and Therapeutics, King's College  
London, &c. &c.

EDITED BY JOSEPH CARSON, M. D.,

Professor of Materia Medica in the Philadelphia College of Pharmacy, &c. &c.

WITH NINETY-EIGHT ILLUSTRATIONS.

*In one large octavo volume of about 700 pages.*

Being one of the most beautiful Medical works published in this country.

This work is ably done—the botanical part with great skill, and the chemical, natural history, and therapeutic department, most perfect and complete.—*Edinburgh Medical Journal*.

This is another of that beautiful and cheap series of manuals published by Mr. Churchill. In the execution of the wood cuts, of plants, flowers and fruits, Mr. Bagg seems almost to have exceeded his former doings. The work is, indeed, a most valuable one. It would be injustice to the learned author not to state that, in addition to what other works on the subject necessarily contained, the reader will find here not a little that is original, or introduced for the first time, more especially in the details of botany and natural history.—*British and Foreign Medical Review*.

RAMSBOTHAM'S MIDWIFERY.

THE PRINCIPLES AND PRACTICE OF

## OBSTETRIC MEDICINE AND SURGERY,

IN REFERENCE TO THE PROCESS OF PARTURITION.

ILLUSTRATED BY

*One hundred and forty-eight Large Figures on 55 Lithographic Plates.*

BY FRANCIS H. RAMSBOTHAM, M. D., &c.

A NEW EDITION, FROM THE ENLARGED AND REVISED LONDON EDITION.

*In one large imperial octavo volume, well bound.*

It is the book of Midwifery for students; clear, but not too minute in its details, and sound in its practical instructions. It is so completely illustrated by plates (admirably chosen and executed), that the student must be stupid, indeed, who does not understand the details of this branch of the science, so far, at least, as description can make them intelligible.—*Dublin Journal of Medical Science*.

Now Ready, brought up to July 1848,

A New Edition of WILSON'S HUMAN ANATOMY, much Improved.

# A SYSTEM OF HUMAN ANATOMY, GENERAL AND SPECIAL.

BY ERASMUS WILSON, M. D.

FOURTH AMERICAN, FROM THE LAST ENGLISH EDITION.

EDITED BY PAUL B. GODDARD, A. M. M. D.,

Professor of Anatomy in the Franklin Medical College, Philadelphia.

WITH TWO HUNDRED AND FIFTY ILLUSTRATIONS.

*Beautifully printed in One large Octavo Volume of nearly Six Hundred pages.*

In passing through numerous editions, both in England and this country, this work has received many improvements and modifications, and it may now be confidently presented to the profession as containing all the important facts in general and special anatomy in a clear and lucid manner, fully brought up to the present level of science. It has long been known as the favorite text-book in this department of medical science, and it is now used in a large proportion of the colleges throughout the country, to which it is further recommended by its admirable series of illustrations, its beautiful mechanical execution, its neat and convenient size, and the very low rate at which it is furnished.

In many, if not all the colleges of the Union, it has become a standard text book.—*N. Y. Medical Journal.*

FROM GRANVILLE SHARP PATTISON, M. D., *Professor of Anatomy in the University of New York.*

"I have a very high opinion of the work of Wilson, and I feel that you have conferred a favor on the profession by the very handsome edition of it which you have published."

FROM J. N. BYBEE, M. D., *Professor of Anatomy in the Memphis Medical College.*

"I look upon this book as one of the best, if not the very best, in the English language, for the practical anatomist."

FROM PROFESSOR W. R. GRANT, *of the Pennsylvania Medical College.*

"I have heretofore considered Wilson's Anatomy as one of the best books for the use particularly of students, and as such have recommended it to the classes of the Pennsylvania Medical College."

FERGUSSON'S SURGERY---New and Improved Edition of 1848, Now Ready.

# A SYSTEM OF PRACTICAL SURGERY.

BY WILLIAM FERGUSSON, F. R. S. E.,

Professor of Surgery in King's College, London, &c. &c.

THIRD AMERICAN, FROM THE LAST ENGLISH EDITION.

With Two Hundred and Seventy-four Illustrations by Bagg, Engraved by Gilbert.

*In One large and beautifully printed Octavo Volume of Six Hundred and Thirty large Pages.*

It is with unfeigned satisfaction that we call the attention of the profession in this country to this excellent work. It richly deserves the reputation conceded to it, of being the best practical surgery extant, at least in the English language.—*Medical Examiner.*

Professor Fergusson's work, we feel persuaded, will be as great a favorite as it deserves, for it combines the powerful recommendations of cheapness and elegance, with a clear, sound, and practical treatment of every subject in surgical science. The illustrations, by Bagg, are admirable—in his very best style.—*Edinburgh Journal of Medical Science.*

DRUITT'S SURGERY, NEW EDITION,  
NOW READY, 1848.

# THE PRINCIPLES AND PRACTICE OF MODERN SURGERY.

BY ROBERT DRUITT.

A NEW AMERICAN, FROM THE LAST AND IMPROVED LONDON EDITION.

EDITED BY F. W. SARGENT, M. D., AUTHOR OF "MINOR SURGERY."

With One Hundred and Ninety-three Beautiful Wood Engravings.

*In One well printed octavo Volume of Five Hundred and Seventy-six Pages.*

The improvement of this edition will be found fully to warrant a continuance of the favor so long extended to this excellent work. The size of the page has been increased, and the volume itself enlarged by about fifty pages, giving ample space for the addition of all new and interesting matter which the progress of the science has rendered necessary since the appearance of the last edition. The wood-cuts have been thoroughly revised, many of them rejected and their places supplied by better designs, and numerous new engravings added. The amount of these changes may be estimated from the fact, that over half of the illustrations in this edition have appeared in no former one. The mechanical execution will also be found much improved.

An unsurpassable compendium not only of surgical but of medical practice.—*London Medical Gazette.*

This work merits our warmest commendations, and we strongly recommend it to young surgeons as an admirable digest of the principles and practice of modern Surgery.—*Medical Gazette.*



TAYLOR'S TOXICOLOGY. JUST PUBLISHED.

**ON POISONS**

IN RELATION TO MEDICAL JURISPRUDENCE AND MEDICINE.

BY ALFRED S. TAYLOR, F.R.S.,

Lecturer on Medical Jurisprudence and Chemistry in Guy's Hospital, and author of "Medical Jurisprudence," &amp;c. &amp;c.

**Edited, with Notes and Additions,**

BY R. EGLESFELD GRIFFITH, M.D.

In one large octavo volume, to match the "Medical Jurisprudence" of the same author.

It is, so far as our knowledge extends, incomparably the best upon the subject; in the highest degree creditable to the author, entirely trustworthy, and indispensable to the student and practitioner, and likely to prove of immense service to the local practitioner, whether engaged in the duty of prosecuting the criminal or defending the innocent from condemnation.—*N. Y. Annalist*..

It is safe to say, that the volume of Mr. Taylor forms one of the most complete treatises on poisons extant, and that it is a work which ought to be in the hands of every physician and lawyer. It is an elaborate epitome of all that is known on the subject of poisons. The subject is one of deep interest. We shall avail ourselves of the earliest opportunity to say more about this excellent treatise.—*The Western Journal of Medicine and Surgery*.

We can most unreservedly recommend Mr. Taylor's treatise to our readers as the most complete, and at the same time, condensed system of Toxicology extant, and as the one which, we feel assured, will henceforth rank in this country as the chief authority on the subject.—*Medico-Chirurgical Review*.

The reputation acquired by Mr. Taylor, by his researches in Toxicology and Legal Medicine, is *prima facie* evidence in favor of anything coming from his hands; and we accordingly find that in the present treatise, he has not fallen short of his reputation. It, moreover, fills up what has been a gap in the science of Toxicology. Dr. Christison and M. Orfila have rather endeavored to elucidate the chemical history, modes of detection, and treatment in cases of poisoning. Dr. Taylor, on the contrary, with fewer chemical details, has directed his inquiries towards a careful review of the symptoms peculiar to each poison, the examination and comparison of the symptoms of each with the other, and with similar symptoms which may be developed by diseased actions in the economy. His work thus, besides being an excellent guide to the medical practitioner, in assisting his diagnosis in cases of poisoning, is also valuable to the medical man who is called upon to give his testimony before a court in criminal cases.—*The Charleston Medical Journal and Review*.

For ourselves, we feel confident that it will ere long be the table-book of every medical practitioner who has the least regard for his own reputation, and be found in the circuit-bag of the Barrister, in company with Archbold's Criminal Pleadings, and Roscoe's Criminal Evidence.—*The Dublin Quarterly Journal*.

**Just Published.****THE HUMAN BRAIN;****ITS STRUCTURE, PHYSIOLOGY AND DISEASES.**

WITH A DESCRIPTION OF THE TYPICAL FORM OF THE BRAIN IN THE ANIMAL KINGDOM.

BY SAMUEL SOLLY, F.R.S., &amp;c.,

Senior Assistant Surgeon to St. Thomas' Hospital, &amp;c.

FROM THE SECOND AND MUCH ENLARGED LONDON EDITION.

In One Octavo Volume; with One Hundred and Twenty Wood-cuts.

The most complete account of the anatomy, physiology, and pathology of the brain that has hitherto appeared. We earnestly advise all our professional brethren to enrich their libraries with this admirable treatise.—*Medico-Chirurgical Review*.

In the arrangement of this admirable treatise we have, first, an excellent structural anatomy; second, a deeply interesting comparative anatomy, extending over many of the species of the different genera which make up the great classes of the animal kingdom; third, an account of the protective apparatus; fourth, a chapter on the weight; fifth, on the configuration of the brain. We have then an elaborate account of its dissection, and that of the spinal cord, of the cerebral nerves and circulation, of the development of the brain, and lastly some remarks (and here occurs the only deficiency we have to complain of) on the physiology of the cerebro-spinal axis, and some phrenological observations. All the preceding topics being treated of according to the improved mode of dissection of the organ adopted at the present day, assisted by microscopical research, and written professedly in elucidation of its internal structure, &c., by one of the ablest cerebro-anatomists, if we may coin a word, of the day, it is useless to say that this treatise is an unsurpassed guide to the student in his investigations of the delicate and complex structure of this beautiful and curious organ.

The pathological portion of the volume occupies about one half of the whole, and we know of none better, and few as good. The various diseases to which the brain is liable are treated of scientifically, concisely, sufficiently, and nobly; and many valuable and well recorded cases are related in illustration of symptoms, effects, and treatment; and the whole is characterized by a profound knowledge of anatomy, and pathological anatomy, descriptive, histological and chemical. We should suppose that neither the encephalon, nor its diseases could be properly studied without reference to this volume.—*The Annalist*.

We have felt great satisfaction in again accompanying Mr. Solly in his lucid description of the exquisite structural arrangements of this wonderful organ; and we can unhesitatingly say, that the student will find comprehended in the first ten chapters of Mr. Solly's treatise, a series of the most comprehensive and interesting anatomical details in the English language. We shall, however, chiefly confine our remarks to the eleventh and concluding part of the treatise, (which, by the by, rather exceeds in quantity of letterpress the whole of the other ten taken together,) containing what the author modestly terms an "outline of the diseases of the brain," but which we do not hesitate to characterize as a very excellent and practical description of this important and obscure class of maladies. \* \* \* \* \* This work is one which fully deserves, and will certainly obtain a place among our medical classics. The subjects of which it treats, like almost all questions in anatomy and pathology, will doubtless, as science advances, receive numerous additions and modifications; but the scope of the treatise is so ample, and the arrangement of its various topics so judicious, that we believe it need never be superseded as a standard work of reference.—*London Med. Gazette*.

**WATSON'S PRACTICE.**

A NEW EDITION.

**LECTURES ON THE  
PRINCIPLES AND PRACTICE OF PHYSIC.**

DELIVERED AT KING'S COLLEGE, LONDON.

BY THOMAS WATSON, M. D., &amp;c. &amp;c.

**Third American from the last London Edition.**

REVISED, WITH ADDITIONS,

BY D. FRANCIS CONDIE, M. D.,

Author of a Work on the "Diseases of Children," &amp;c.

In One Octavo Volume.

Of nearly **ELEVEN HUNDRED LARGE PAGES**, strongly bound with raised bands.

The rapid sale of two large editions of this work is an evidence of its merits, and of its general favor with the American practitioner. To commend it still more strongly to the profession, the publishers have gone to a great expense in preparing this edition with larger type, finer paper and stronger binding with raised bands. It is edited with reference, particularly to American practice, by Dr. Condie; and with these numerous improvements, the price is still kept so low as to be within the reach of all, and to render it among the cheapest works offered to the profession. It has been received with the utmost favor by the medical press, both of this country and of Europe, some of the notices of which may be seen in the Supplement to the Medical News for June 1847.

**CARPENTER'S HUMAN PHYSIOLOGY.**

LATELY ISSUED.

A NEW, MUCH IMPROVED AND ENLARGED EDITION OF  
**THE PRINCIPLES OF HUMAN PHYSIOLOGY,**

WITH THEIR CHIEF APPLICATIONS TO PATHOLOGY, HYGIENE, AND FORENSIC MEDICINE.

BY WILLIAM B. CARPENTER, M. D., F. R. S.,

Fullerian Professor of Physiology in the Royal Institution of Great Britain; author of "Elements of Physiology," "Principles of General and Comparative Physiology," "Principles of Animal Physiology," &c. &c.

THIRD AMERICAN FROM THE LAST LONDON EDITION,

WITH NOTES AND ADDITIONS BY

MEREDITH CLYMER, M. D.,

Consulting Physician to the Philadelphia Hospital, &amp;c. &amp;c.

Containing Three Hundred and Seventeen Wood-cut and other Illustrations.

In One Large and Beautifully Printed Octavo Volume of over seven hundred and fifty pages, strongly bound.

**THE GREAT MEDICAL LIBRARY.****THE CYCLOPEDIA OF PRACTICAL MEDICINE;**

COMPRISING

Treatises on the Nature and Treatment of Diseases, Materia Medica and Therapeutics, Diseases of Women and Children, Medical Jurisprudence, &c. &c.

EDITED BY

JOHN FORBES, M. D., F. R. S., ALEXANDER TWEEDIE, M. D., F. R. S.,  
AND JOHN CONOLLY, M. D.

Revised, with Additions,

BY ROBLEY DUNGLISON, M. D.

THIS WORK IS NOW COMPLETE, AND FORMS FOUR LARGE SUPER-ROYAL OCTAVO VOLUMES.

Containing Thirty-two Hundred and Fifty-Four unusually large Pages in Double Columns, Printed on Good Paper, with a New and Clear Type.

The whole well and strongly bound, with Raised Bands and Double Titles.

Or, to be had in Twenty-four Parts, at Fifty Cents each.

For a list of Articles and Authors, together with opinions of the press, see various Supplements to the Medical News and Library.



OTHER WORKS  
IN  
VARIOUS DEPARTMENTS  
OF  
MEDICINE AND SURGERY.

PUBLISHED BY  
**LEA AND BLANCHARD.**

- AMERICAN JOURNAL OF THE MEDICAL SCIENCES.** Edited by Isaac Hays, M.D. Published quarterly at \$5 per annum.
- ARNOTT'S PHYSICS.**—The Elements of Physics in plain or non-technical language. A new edition, edited by Isaac Hays, M.D. In 1 vol. 8vo., sheep, with 176 wood-cuts.
- ABERCROMBIE ON THE STOMACH.**—Pathological and Practical Researches on Diseases of the Stomach, Intestinal Canal, &c. Fourth edition, in 1 vol. 8vo., sheep.
- ABERCROMBIE ON THE BRAIN.**—Pathological and Practical Researches on the Diseases of the Brain and Spinal Cord. A new edition, in one octavo volume, sheep.
- ASHWELL ON FEMALES.**—A Practical Treatise on Diseases Peculiar to Women, edited by Goddard. New edition, 1848, 1 large vol. 8vo.
- ALISON'S PATHOLOGY.**—Outlines of Pathology and Practice of Medicine; in three parts; containing Preliminary Observations, Inflammatory and Febrile Diseases, and Chronic or Non-Febrile Diseases. In one neat octavo volume, sheep.
- BENNET'S PRACTICAL TREATISE ON INFLAMMATION, ULCERATION AND INDURATION OF THE NECK OF THE UTERUS.** In one small 12mo. volume, cloth.
- BURROWS ON CEREBRAL CIRCULATION.**—On the Disorders of the Cerebral Circulation, and on the Connection between Affections of the Brain and Diseases of the Heart. With colored plates, 1 vol. 8vo., 1848.
- BIRD ON URINARY DEPOSITS.**—Urinary Deposits, their Diagnosis, Pathology and Therapeutical Indications. In one neat octavo volume, cloth, with numerous wood-cuts.
- BIRD'S NATURAL PHILOSOPHY.**—Being an Experimental Introduction to the Study of the Physical Sciences. Especially intended for the Use of the Medical Student. In one handsome royal 12mo. volume, with 372 cuts.
- BERZELIUS ON THE KIDNEYS AND URINE.** In 1 vol. 8vo., cloth.
- BUCKLAND'S GEOLOGY.**—Geology and Mineralogy, with reference to Natural Theology; a Bridgewater Treatise. In two octavo volumes, with numerous maps, plates, &c.
- BLAKISTON ON THE CHEST.**—Practical Observations on certain Diseases of the Chest, and on the Principles of Auscultation. 1 vol. 8vo., cloth, 1848.
- BRODIE'S SURGICAL LECTURES.**—Clinical Lectures on Surgery. 1 vol. 8vo., cloth.
- BRODIE ON THE JOINTS.**—Pathological and Surgical Observations on the Diseases of the Joints. 1 vol. 8vo., cloth.
- BRODIE ON URINARY ORGANS.**—Lectures on the Diseases of the Urinary Organs. 1 vol. 8vo., cloth.
- \* \* \* These three works may be had neatly bound together, forming a large volume of "Brodie's Surgical Works."
- BUDD ON DISEASES OF THE LIVER.**—In one octavo volume, sheep, with beautiful colored plates and numerous wood-cuts.
- BRIDGEWATER TREATISES.** The whole complete in 7 vols. 8vo., containing Roget's Animal and Vegetable Physiology, in 2 vols., with many cuts; Kirby on the History, Habits, and Instinct of Animals, 1 vol., with plates; Prout on Chemistry; Chalmers on the Moral Condition of Man; Whewell on Astronomy; Bell on the Hand; Kidd on the Physical Condition of Man; and Buckland's Geology, 2 vols., with many plates and maps.
- BARTLETT'S PHILOSOPHY OF MEDICINE.**—Essay on the Philosophy of Medical Science. In two parts; one neat octavo volume, extra cloth.
- BRIGHTON ON MIND, &c.**—The Influence of Mental Excitement and Mental Cultivation on Health. In one neat 12mo. volume, extra cloth.
- BILLING'S PRINCIPLES OF MEDICINE.**—The First Principles of Medicine. From the fourth London edition; in one octavo volume, cloth.
- BENEDICT'S CHAPMAN.**—Compendium of Chapman's Lectures on the Practice of Medicine. One neat vol., 8vo.
- CHAPMAN'S LECTURES ON THORACIC AND ABDOMINAL VISCERA.** 1 vol. 8vo.
- CHAPMAN'S LECTURES ON FEVERS, DROPSIES, GOUT, RHEUMATISM, &c. &c.** 1 vol. 8vo.
- CARPENTER'S ELEMENTS OF PHYSIOLOGY.**—For the Use of the Medical Student. One large vol. 8vo., with 180 illustrations.
- CARPENTER'S VEGETABLE PHYSIOLOGY.**—A Popular Treatise on Vegetable Physiology. With numerous wood-cuts; in one 12mo. volume, extra cloth.
- CLATER AND SKINNER'S FARRIER.**—Every Man his own Farrier; containing the Causes, Symptoms, and most approved Methods of Cure of the Diseases of Horses. From the 28th London edition; edited by Skinner; in one 12mo. volume, cloth.
- CLATER AND YOUATT'S CATTLE DOCTOR.**—Every Man his own Cattle Doctor; containing the Diseases of Oxen, Sheep, Swine, &c. Edited by Youatt, and revised by Skinner; with wood-cuts; in one volume 12mo.
- COOPER (SIR ASTLEY) ON THE ANATOMY AND TREATMENT OF ABDOMINAL HERNIA.** 1 large vol., imp. 8vo., with over 130 lithographic figures.

- COOPER ON THE STRUCTURE AND DISEASES OF THE TESTIS, AND ON THE THYMUS GLAND. 1 vol., imp. 8vo., with 177 figures on 29 plates.
- COOPER ON THE ANATOMY AND DISEASES OF THE BREAST, WITH TWENTY-FIVE MISCELLANEOUS SURGICAL PAPERS. 1 large vol., imp. 8vo., with 252 figures on 36 plates.
- COOPER ON DISLOCATIONS AND FRACTURES OF THE JOINTS.—Edited by Bransby Cooper and J. C. Warren. 1 vol., 8vo., with 133 cuts.
- CLYMER AND OTHERS ON FEVER.—Fever, their Diagnosis, Pathology and Treatment. In one large vol. 8vo.
- DURLACHER ON CORNS, BUNIONS, &c.—A Treatise on Corns, Bunions, the Diseases of Nails, and the General Management of the Feet. In one 12mo. volume, cloth.
- DEWEES'S MIDWIFERY.—A Comprehensive System of Midwifery, for the Use of the Medical Student. Eleventh edition, 1 vol. 8vo., with plates.
- DEWEES ON FEMALES.—A Treatise on the Diseases of Females. Ninth edition, 1 vol. 8vo., plates.
- DEWEES ON CHILDREN.—A Treatise on the Physical and Medical Treatment of Children. Ninth edition, 1 vol. 8vo.
- DUFTON ON DEAFNESS AND DISEASES OF THE EAR. In 1 12mo. vol., cloth, with a plate.
- ELLIS'S FORMULARY.—The Medical Formulary, being a Collection of Prescriptions derived from the Writings and Practice of the most eminent Physicians of America and Europe; to which is added an Appendix, containing the usual Dietetic Preparations and Antidotes for Poisons. By Benjamin Ellis, M. D. Eighth edition, with extensive alterations and additions. By Samuel George Morton, M. D. In one neat 8vo. volume.
- ESQUIROL ON INSANITY.—Mental Maladies, considered in relation to Medicine, Hygiene and Medical Jurisprudence. Translated by E. K. Hunt, M. D., &c. In 1 vol. 8vo.
- FOWNES' ELEMENTS OF CHEMISTRY for the Use of the Medical Student. In one handsome volume, royal 12mo., with numerous cuts. Second American edition, by Bridges.
- GRIFFITH'S CHEMISTRY OF THE FOUR SEASONS—Spring, Summer, Autumn and Winter. One neat vol. 12mo., with cuts.
- GUTHRIE ON THE BLADDER, &c.—The Anatomy of the Bladder and Urethra, and the Treatment of the Obstructions to which those Passages are liable. In 1 vol. 8vo.
- HARRIS ON MAXILLARY SINUS.—Dissertation on the Diseases of the Maxillary Sinus. In one small octavo volume, cloth.
- HOPE ON THE HEART.—A Treatise on the Diseases of the Heart and Great Vessels. Edited by Pennock. 1 vol. 8vo., with plates.
- HARRISON ON THE NERVES.—An Essay towards a correct Theory of the Nervous System. In one octavo volume, sheep.
- HUGHES ON THE LUNGS AND HEART.—Clinical Introduction to the Practice of Auscultation, and other Modes of Physical Diagnosis, intended to simplify the Study of the Diseases of the Heart and Lungs. By H. M. Hughes, M. D., &c. In one 12mo. volume, with a plate.
- HOBLYN'S MEDICAL DICTIONARY.—Dictionary of the Terms used in Medicine. Edited by Hays. 1 vol. royal 12mo.
- HASSE'S PATHOLOGICAL ANATOMY.—An Anatomical Description of the Diseases of the Organs of Circulation and Respiration. Translated and edited by Swaine. In one octavo volume.
- INTRODUCTION TO PRACTICAL ORGANIC CHEMISTRY; based on the Works of Brande, Liebig, and others. In one volume 18mo., paper, price 25 cents.
- INTRODUCTION TO VEGETABLE PHYSIOLOGY.—With reference to the Works of De Candolle, Lindley, &c. In one volume, 18mo., paper, price 25 cents.
- KIRBY ON ANIMALS.—The History, Habits, and Instinct of Animals. A Bridgewater Treatise. In one large volume 8vo., with plates.
- KIRBY AND SPENCE'S ENTOMOLOGY.—An Introduction to Entomology; or Elements of the Natural History of Insects; comprising an Account of Noxious and Useful Insects, of their Metamorphosis, Food, Stratagems, Habitations, Societies, Motions, Noises, Hybernation, Instinct, &c. &c. In one large octavo volume, neat extra cloth, with plates, plain or beautifully colored. From the sixth London edition.
- LISTON AND MUTTER'S SURGERY.—Lectures on the Operations of Surgery. One large vol. 8vo., with 216 cuts.
- LALLEMAND ON SPERMATORRHEA.—The Causes, Symptoms, and Treatment of Spermatorrhœa. Translated and edited by Henry J. M'Dougall, M. D. 1 vol. 8vo., 1848.
- LAWRENCE ON RUPTURES.—A Treatise on Ruptures, from the fifth London edition. In one octavo volume, sheep.
- MILLER'S PRINCIPLES OF SURGERY. One large vol. 8vo., 2d American edition, 1848.
- MILLER'S PRACTICE OF SURGERY. One large vol. 8vo.
- MAN'S POWER OVER HIMSELF TO PREVENT OR CONTROL INSANITY. One vol. 18mo., paper, price 25 cents.
- MAURY'S DENTAL SURGERY.—A Treatise on the Dental Art, founded on Actual Experience. Illustrated by 241 lithographic figures and 54 wood-cuts. Translated by J. B. Savier. In one octavo volume, sheep.
- MEDICAL NEWS AND LIBRARY, published monthly at One Dollar per annum.
- MULLER'S PHYSIOLOGY.—Elements of Physiology. Translated by Wm. Baly, M. D., and edited and arranged by John Bell, M. D. In one large octavo volume, sheep.
- MEIGS' COLOMBAT ON FEMALES.—Treatise on the Diseases of Females, and on the Special Hygiene of their Sex. Translated by C. D. Meigs, M. D. In 1 vol. large 8vo., with cuts.
- MATTEUCCI ON LIVING BEINGS.—Physical Phenomena of Living Beings. Edited by Pereira. 1 vol. royal 12mo., with cuts.
- PRACTICAL ORGANIC CHEMISTRY. 18mo., sewed, price 25 cents.
- PROUT ON THE STOMACH.—On the Nature and Treatment of Stomach and Renal Diseases. In one octavo volume, sheep, with colored plates.



- PHILIP ON INDIGESTION.**—A Treatise on Protracted Indigestion. In 1 vol. 8vo.
- PHILLIPS ON SCROFULA.**—Scrofula, its Nature, its Prevalence, its Causes, and the Principles of its Treatment. In one neat octavo volume, cloth, with a plate.
- ROGET'S PHYSIOLOGY.**—A Treatise on Animal and Vegetable Physiology, with over 400 illustrations on Wood. In two octavo volumes, cloth. A Bridgewater Treatise.
- ROGET'S OUTLINES OF PHYSIOLOGY.**—Outlines of Physiology and Phrenology. In one large octavo volume, cloth.
- RICORD ON VENEREAL.**—A Practical Treatise on Venereal Diseases; with a Therapeutical Summary, and a special Formulary. In one vol. 8vo., cloth.
- ROBERTSON ON TEETH.**—A Practical Treatise on the Human Teeth, with Plates. One small volume, octavo, cloth.
- SIMON'S CHEMISTRY OF MAN.**—Animal Chemistry with reference to the Physiology and Pathology of Man. One large vol. 8vo., with plates.
- TODD & BOWMAN'S PHYSIOLOGICAL ANATOMY AND PHYSIOLOGY OF MAN,** with numerous illustrations. Publishing in the Medical News and Library.
- TAYLOR'S MEDICAL JURISPRUDENCE.**—With numerous Notes and Additions, and References to American Practice and Law. By R. E. Griffith, M. D. In one vol. 8vo.
- THE CONNECTION BETWEEN PHYSIOLOGY AND INTELLECTUAL SCIENCE.** 1 vol. 18mo., paper, price 25 cents.
- THOMPSON'S SICK ROOM.**—Domestic Management of the Sick Room, Necessary in Aid of Medical Treatment for the Cure of Diseases. Edited by R. E. Griffith. In one large royal 12mo. volume, extra cloth, with wood-cuts.
- TRAILL'S MEDICAL JURISPRUDENCE.**—Outlines of a Course of Lectures on Medical Jurisprudence. Revised, with numerous Notes. In one octavo volume, cloth.
- VOGEL'S PATHOLOGICAL ANATOMY.**—The Pathological Anatomy of the Human Body. Translated by Day. One large vol. 8vo., with plates.
- WALSHE ON THE LUNGS.**—Physical Diagnosis of the Diseases of the Lungs. In one neat 12mo. volume, extra cloth.
- WILLIAMS AND CLYMER ON THE CHEST.**—A Treatise on the Diseases of the Respiratory Organs, including the Larynx, Trachea, Lungs, and Pleura. With numerous Additions and Notes, by Meredith Clymer, M. D. In one neat 8vo. volume, with cuts.
- WHITEHEAD ON ABORTION AND STERILITY.**—The Causes and Treatment of Abortion and Sterility, being the Result of an extended Practical Inquiry into the Physiological and Morbid Conditions of the Uterus. 1 vol. 8vo., 1848.
- WILSON'S DISSECTOR. THE DISSECTOR, OR PRACTICAL AND SURGICAL ANATOMY.** With 106 illustrations. Modified and re-arranged by Paul B. Goddard, M. D., &c. In one large royal 12mo. volume, sheep.
- WILSON ON THE SKIN.**—Anatomy and Diseases of the Skin. 2d edition, improved, 1 vol. 8vo.  
\* \* Same work, with colored plates; also the plates sold separate.
- YOUATT ON THE HORSE.**—The Horse: containing a full account of the Diseases of the Horse, with their Mode of Treatment; his Anatomy, and the usual Operations performed on him; his Breeding, Breaking, and Management; and Hints on his Soundness, and Purchase and Sale. Together with a General History of the Horse; a Dissertation on the American Trotting Horse, how Trained and Jockeyed; an Account of his Remarkable Performances; and an Essay on the Ass and the Mule. By J. S. Skinner, Assistant Postmaster-General, and Editor of the Turf Register. In one volume octavo, with numerous cuts.

**GARDNER'S MEDICAL CHEMISTRY—Now Ready.**

**MEDICAL CHEMISTRY, FOR THE USE OF STUDENTS:**  
BEING A MANUAL OF THE SCIENCE WITH ITS APPLICATIONS TO TOXICOLOGY, PHYSIOLOGY, THERAPEUTICS, HYGIENE, &c. &c.

BY D. PEREIRA GARDNER, M. D.,

Late Professor of Chemistry in the Philadelphia College of Medicine, and of Chemistry and Nat. Philos. in Hampden Sidney College, &c.

*In One handsome royal 12mo. Volume, with Illustrations.*

This work, while embodying a full course of modern Chemistry, has been prepared especially for the use of the student of medicine. With this view, the author has endeavored not so much to make a treatise on abstract Chemistry, as to present all the applications of the science to the various departments of medicine. There appears to be a necessity for a book of this kind, which has not as yet been supplied among the numerous and excellent textbooks before the profession. The limited time devoted to the study in our medical colleges does not permit the teacher to point out the numerous and important applications of modern Chemistry to Medicine, or enable the student to discover them for himself. These topics, therefore, have been dwelt on at large by the author, while he has passed cursorily over those objects which are known only as chemical or mineralogical curiosities.

**JONES ON THE EYE—Lately Published.**

**THE PRINCIPLES AND PRACTICE  
OF OPHTHALMIC MEDICINE AND SURGERY.**

BY T. WHARTON JONES, F.R.S., &c. &c.

WITH ONE HUNDRED AND TEN ILLUSTRATIONS.

EDITED BY ISAAC HAYS, M.D., &c.

*In one very neat volume, large royal 12mo., with Four Plates, plain or colored, and 98 well executed Woodcuts.*

# ILLUSTRATED SERIES OF SCIENTIFIC WORKS,

NOW PUBLISHING BY LEA & BLANCHARD.

This series comprises works of the highest character on the various branches of practical science. In their illustration and mechanical execution they are prepared without regard to expense, and the publishers present them as equal, if not superior, to anything as yet executed. Each volume is superintended by a competent editor, who makes such additions as the progress of science in this country may require, and at the same time corrects such errors as may have escaped the press in London. The publishers, therefore, hope that these works may attract the approbation of the scientific public by their intrinsic value, the correctness of the text, the beautiful style in which they are produced, and the extremely low rate at which they are furnished.

THE FIRST VOLUME IS

## PRINCIPLES OF PHYSICS & METEOROLOGY, BY J. MULLER,

Professor of Physics at the University of Freiburg.

WITH ADDITIONS AND ALTERATIONS BY THE AMERICAN EDITOR.

ILLUSTRATED WITH NEARLY FIVE HUNDRED AND FIFTY ENGRAVINGS ON WOOD, AND TWO COL'D PLATES.

In One large Octavo Volume.

The Physics of Muller is a work superb, complete, unique: the greatest want known to English Science could not have been better supplied. The work is of surpassing interest. The value of this contribution to the scientific records of this country may be estimated by the fact that the cost of the original drawings and engravings alone has exceeded the sum of £2,000.—*Lancet*.

The style in which the volume is published is in the highest degree creditable to the enterprise of the publishers. It contains nearly six hundred engravings executed in a style of extraordinary elegance. We commend the book to general favor. It is the best of its kind we have ever seen.—*N. Y. Courier & Enquirer*.

We can safely say, that, if the forthcoming works be of equal merit, and produced in similar style, the series will prove one of a very invaluable character, which cannot fail to be in universal request.—*North American*.

From *Wm. H. Bartlett, Esq., Professor of Natural and Experimental Philosophy, U. S. Military Academy, West Point.*

I deem this work a most valuable addition to the educational facilities of the country, and a rich source of information to the general reader, as it is truly an elegant specimen of typography.

WEST POINT, March 15th, 1848.

THE SECOND VOLUME IS

## PRINCIPLES OF THE MECHANICS

OF

## MACHINERY AND ENGINEERING.

BY PROF. JULIUS WEISBACH.

EDITED BY PROFESSOR W. R. JOHNSON, OF PHILADELPHIA.

Volume I., now ready, containing about 500 pages, and five hundred and fifty wood-cuts.

Volume II., completing the work, will be shortly ready, of about the same size and appearance.

The most valuable contribution to practical science that has yet appeared in this country. The work embraces not only the subjects of Statics and Dynamics, but also Hydrostatics, Hydraulics and Pneumatics—each treated in sufficient detail for every practical purpose, and no demonstration calling in the aid of higher mathematics than elementary geometry and algebra. The work is beautifully got up as to letterpress and illustrations, the diagrams being the most picturesque that we have seen.—*London Athenæum*.

From *Professor Elias Loomis of the New York University.*

I have examined Weisbach's Mechanics and Engineering with considerable attention; and I am much pleased with it. It is a work prepared with great care and judgment. The Principles of Mechanics are stated in a form which is clear, concise, and easily understood; they are reduced to precise rules or formulæ, and are abundantly illustrated with numerical examples. The diagrams are numerous, neat, and well calculated to convey clear ideas.—The portion treating of the dynamics of fluid bodies is particularly rich, and the results both of theory and experiment are given in a brief and perspicuous form. The entire treatise is intelligible to one who is only familiar with the lower mathematics, and it must become a standard work with mechanics and engineers.

NEW YORK, May 6th, 1848.

From *Henry Vethake, Esq., Professor of Mathematics in the University of Pennsylvania.*

I have examined, with some care, the first volume of "Weisbach's Principles of the Mechanics of Machinery and Engineering," and I have been not a little gratified in doing so. It is the most comprehensive, accurate, and best executed work, on the subject of which it treats, with which I am acquainted in the English language; and the labors of the American editor have considerably enhanced its original value. Let me say, too, that by presenting it, as well as the other volumes of the series of which it is a part, to the American public, you will, in my opinion, contribute largely to raise the standard of scholarship in our country, especially in respect to the applications of science to the mechanical and chemical arts.

PHILADELPHIA, May 26th, 1848.



**Illustrated Series of Scientific Works---Continued.**

THE THIRD VOLUME IS  
**TECHNOLOGY; OR, CHEMISTRY**  
 AS APPLIED TO THE ARTS AND TO MANUFACTURES.  
 BY F. KNAPP.

TRANSLATED AND EDITED BY

DR. EDMUND RONALDS, AND DR. THOMAS RICHARDSON,  
 [Lecturer on Chemistry at the Middlesex Hospital.] [Of Newcastle.]

Revised, with American Additions, by  
 PROFESSOR WALTER R. JOHNSON, OF PHILADELPHIA.

WITH NUMEROUS BEAUTIFUL WOOD-CUTS.

Volume I., now ready, containing about 500 pages, and 214 beautiful wood engravings.

Vol. II., preparing, of a similar size and appearance.

This volume contains complete monographs on the subjects of Combustion and Heating, Illumination and Lighting, Manufactures from Sulphur, Manufacture of Common Salt, Soda, Alkalimetry, Boracic Acid Manufacture, Saltpetre Manufacture, Gunpowder Manufacture, Nitric Acid Manufacture, and Manufacture of Soap, together with an appendix containing various miscellaneous improvements concerning the foregoing subjects. The object of this work is purely practical, presenting in each topic, a clear and condensed view of the present state of the manufacture, with all the improvements suggested by the discoveries of science; and the whole illustrated with numerous large and well executed engravings of apparatus, machinery, processes, &c. &c.

One of the best works of modern times—*N. Y. Commercial*, June 1848.

The original treatise is one of great value; it has been carefully translated by gentlemen themselves well versed in the processes it describes, and consequently familiar with their technical language—and it has received from them numerous important additions in which are described the most recent improvements in the various chemical arts as practised in this country.—*Medico-Chirurgical Review*:

When we say that this volume begins another of the superb "Library of Illustrated Books," republished from the London series by Lea & Blanchard, of which Muller's Physics and Meteorology, and Weisbach's Mechanics and Engineering, (the first volume of the latter have already appeared; and that the present work is on a subject coming home to the business and bosoms, because to the economic interests of Americans; and that its American editor is Prof. Walter R. Johnson, who has enriched it with numerous valuable additions, the results of his own industrious researches in the technological sciences; and that it is illustrated and printed in the same superb style which marked the previous works:—we have sufficiently explained to our readers the value of a work which will not need any other commendation.—*North American*, June 1848.

To be followed by works on PHARMACY, CHEMISTRY, ASTRONOMY, HEAT, HYDRAULICS, METALLURGY, PATHOLOGICAL ANATOMY, RURAL ECONOMY, &c. &c.

*Specimens may be had on application to the Publishers.*

**BIRD'S NATURAL PHILOSOPHY. NOW READY.**  
**ELEMENTS OF NATURAL PHILOSOPHY,**  
 BEING AN EXPERIMENTAL INTRODUCTION TO THE PHYSICAL SCIENCES.

ILLUSTRATED WITH NEARLY FOUR HUNDRED WOOD-CUTS.

BY GOLDING BIRD, M. D.,

Assistant Physician to Guy's Hospital.

FROM THE THIRD LONDON EDITION.

IN ONE NEAT DUODECIMO VOLUME.

Containing about 400 pages and 372 Wood-cuts.

This work is confidently presented to students in Natural Philosophy as a text-book, uniting advantages scarcely possessed by any other. By the use of clear small type, a very large amount of matter has been compressed into the limits of a single low priced duodecimo volume, embracing in a concise but intelligible manner the elements of all that is known on the subjects of Statics, Dynamics, Hydrostatics, Pneumostatics, Hydrodynamics, Acoustics, Magnetism, Electricity, Voltaism, Electro-dynamics, Thermo-electricity, Galvanism, Unpolarized Light, Polarized Light, The Eye and Optical Apparatus, Thermotics, and Photography.

"This book is written in a most pleasing style, and gives the results of abstruse researches in a form adapted to the comprehension of the common reader. It appears to have been specially designed to meet the wants of medical students, whose circumstances often forbid the study of more complete treatises: and it must prove highly acceptable and valuable to all who seek acquaintance with Natural Philosophy, but have not the leisure or the inclination to devote much time to the mathematics."

ELIAS LOOMIS, *Prof. of Nat. Phil. in the Univ. of N. Y.*

NEW YORK, May 6th, 1848.

Now Ready---ILLUSTRATED DON QUIXOTE.

**DON QUIXOTE DE LA MANCHA.**

TRANSLATED BY JARVIS.

WITH COPIOUS NOTES AND A MEMOIR OF THE AUTHOR AND HIS WORKS,  
 ABRIDGED FROM VIARDOT BY THE EDITOR.

With Numerous Illustrations after Tony Johannot.

*In Two handsome Crown Octavo Volumes, extra crimson cloth, half calf or morocco.*

**CAMPBELL'S LORD CHANCELLORS.**

Now Complete in Seven Volumes.

**LIVES OF THE LORD CHANCELLORS  
AND  
KEEPERS OF THE GREAT SEAL OF ENGLAND,**FROM  
THE EARLIEST TIMES TO THE REIGN OF KING GEORGE IV.

BY JOHN LORD CAMPBELL, A. M., F. R. S. E.

*Now complete in seven handsome crown octavo volumes, extra cloth.*

Of the solid merit of the work our judgment may be gathered from what has already been said. We will add, that from its infinite fund of anecdote, and happy variety of style, the book addresses itself with equal claims to the mere general reader, as to the legal or historical inquirer; and while we avoid the stereotyped commonplace of affirming that no library can be complete without it, we feel constrained to afford it a higher tribute by pronouncing it entitled to a distinguished place on the shelves of every scholar who is fortunate enough to possess it.—*Frazer's Magazine, April 1848.*

A work which will take its place in our libraries as one of the most brilliant and valuable contributions to the literature of the present day.—*Athenæum, Dec. 1847.*

**FRANCE UNDER LOUIS PHILIPPE---Now Ready.****THE HISTORY OF TEN YEARS, 1830---1840:  
OR, FRANCE UNDER LOUIS PHILIPPE.**

BY LOUIS BLANC,

Secretary to the Provisional Government of 1848.

TRANSLATED BY WALTER K. KELLY.

*In two handsome crown octavo volumes, extra cloth, or six parts, paper, at fifty cents.*

A History of the Revolution of 1830, and of the first ten years of Louis Philippe's reign, by a man who has borne so prominent a part in the late events in Paris, cannot fail to possess striking interest at the present moment.

This is a remarkable work. The ten years, 1830-1840, were troubled, stirring and important times to every European nation—to none so much as France. \* \* \* 'L'Histoire de Dix Ans' is one of those works so often labelled by being called as interesting as a novel. It is a narrative of events, real, striking, absorbing—the subjects of immense interest to all readers—the style unusually excellent.—*Foreign Quarterly Review.*

**HISTORY OF THE FRENCH REVOLUTION OF 1789.**

BY LOUIS BLANC,

Author of "FRANCE UNDER LOUIS PHILIPPE," &amp;c.

TRANSLATED FROM THE FRENCH.

*In one volume, crown octavo.***STEINMETZ'S HISTORY OF THE JESUITS.—Now Ready.****HISTORY OF THE JESUITS.**FROM THE FOUNDATION OF THEIR SOCIETY TO ITS SUPPRES-  
SION BY POPE CLEMENT XIV.;THEIR MISSIONS THROUGHOUT THE WORLD; THEIR EDUCATIONAL SYSTEM AND  
LITERATURE; WITH THEIR REVIVAL AND PRESENT STATE.

By ANDREW STEINMETZ,

Author of "The Novitiate." "The Jesuit in the Family."

*In two handsome crown octavo volumes of about four hundred pages each, extra cloth.***HERVEY'S COURT OF GEORGE II. Now Ready.****MEMOIRS OF THE REIGN OF GEORGE THE SECOND,  
FROM HIS ACCESSION  
TO THE DEATH OF QUEEN CAROLINE.**

BY JOHN LORD HERVEY.

Edited from the Original Manuscript at Ickworth,

BY THE RIGHT HONORABLE JOHN WILSON CROKER, LL. D., F. R. S., &amp;c.

*In two handsome volumes, royal 12mo., extra cloth.*



NOW COMPLETE.  
**STRICKLAND'S QUEENS OF ENGLAND.**  
 New and Improved Edition.  
**LIVES OF**  
**THE QUEENS OF ENGLAND,**  
 FROM THE NORMAN CONQUEST.

WITH ANECDOTES OF THEIR COURTS;

Now First Published from Official Records, and other Authentic Documents, Private as well as Public.  
 New Edition, with Additions and Corrections.

BY AGNES STRICKLAND.

*In six volumes crown octavo, extra crimson cloth, or half morocco, printed on fine paper and large type.*

In this edition, Volume One contains Vols. 1, 2 and 3 of the 12mo. edition; Volume Two contains Vols. 4 and 5; Vol. Three contains Vols. 6 and 7; Vol. Four contains Vols. 8 and 9; Vol. Five contains Vols. 10 and 11; and Vol. Six contains Vol. 12. The whole forming a very handsome series, suitable for presents, prizes, &c.

The publishers have great pleasure in presenting to the public this work in a complete form. During the long period in which it has been issuing from the press, it has assumed the character of a standard work, and as occupying ground hitherto untouched; as embodying numerous historical facts heretofore unnoticed, and as containing vivid sketches of the characters and manners of the times, with anecdotes, documents, &c. &c., it presents numerous claims on the attention of both the student of history and the desultory reader.

Those who have been awaiting its completion can now obtain it, forming a handsome set, twelve volumes in six, in various styles of binding.

CONTENTS OF THE VOLUMES.

**VOLUME I**—Matilda of Flanders, Matilda of Scotland, Adelia of Louvaine, Maulda of Boulogne, and Eleanor of Aquitaine.

**VOLUME II**—Berengaria of Navarre, Isabella of Angouleme, Eleanor of Provence, Eleanor of Castille, Marguerite of France, Isabella of France, Philippa of Hainault, and Anne of Bohemia.

**VOLUME III**—Isabella of Valois, Joanna of Navarre, Katherine of Valois, Margaret of Anjou, Elizabeth Woodville and Anne of Warwick.

*These three volumes make Vol. I. of the New Edition.*

**VOLUME IV**—Elizabeth of York, Katherine of Arragon, Anne Boleyn, Jane Seymour, Anne of Cleves and Katherine Howard.

**VOLUME V**—Katherine Parr and Mary the First.

*These make Vol. II. of the New Edition.*

**VOLUME VI**—Elizabeth.

**VOLUME VII**—Elizabeth (concluded) and Anne of Denmark.

*These make Vol. III. of the New Edition.*

**VOLUME VIII**—Henrietta Maria and Catherine of Braganza.

**VOLUME IX**—Mary Beatrice of Modena.

*These make Vol. IV. of the New Edition.*

**VOLUME X**—Mary Beatrice of Modena (concluded), Mary II.

**VOLUME XI**—Mary II (concluded), Queen Anne.

*These make Vol. V. of the New Edition.*

**VOLUME XII**—Queen Anne (concluded).

*Making Vol. VI. of the New Edition.*

It will thus be seen that this work presents an uninterrupted history of the Court of England and of the Royal Families from the Norman Conquest to the accession of the House of Hanover, naturally embracing an immense amount of singular and interesting matter, to be met with nowhere else.

These volumes have the fascination of a romance united to the integrity of history.—*Times.*

**THE AMERICAN ENCYCLOPÆDIA.**

BROUGHT UP TO 1847.

**THE ENCYCLOPÆDIA AMERICANA:**

A POPULAR DICTIONARY

**OF ARTS, SCIENCES, LITERATURE, HISTORY, POLITICS AND BIOGRAPHY.**

IN FOURTEEN LARGE OCTAVO VOLUMES OF OVER SIX HUNDRED DOUBLE COLUMNED PAGES EACH.

*For sale very low, in various kinds of binding.*

Some years having elapsed since the original thirteen volumes of the ENCYCLOPEDIA AMERICANA were published, to bring it up to the present day, with the history of that period, at the request of numerous subscribers, the publishers have just issued a

**Supplementary Volume (the Fourteenth), bringing the Work up to the year 1847.**

EDITED BY HENRY VETHAKE, LL. D.,

Vice-Provost and Professor of Mathematics in the University of Pennsylvania, Author of "A Treatise on Political Economy."

*In one large octavo volume of over 650 double columned pages.*

**POEMS.**

BY ELLIS, CURRER, AND ACTON BELL,

Authors of "Jane Eyre," "Wuthering Heights," "Wildfeld Hall," &c.

*In one handsome volume, small 12mo.*

# MISCELLANEOUS WORKS

IN VARIOUS

## DEPARTMENTS OF LITERATURE,

PUBLISHED BY

### LEA & BLANCHARD.

- Acton's Modern Cookery, with cuts, 12mo., cloth.
- American Ornithology, by Prince Charles Bonaparte, in 4 vols. folio, half bound, colored plates.
- American Military Law and Practice of Courts Martial, by Lieut. O'Brien, U. S. A., 1 vol. 8vo., cloth or law sheep.
- Ansted's Ancient World, or Picturesque Sketches of Creation, 1 vol. 12mo., numerous cuts.
- Addison on Contracts, and on Parties to Actions ex Contractu, a new and complete work, 1 large vol. 8vo., law sheep.
- Arnott's Elements of Physics, new edition, 1 vol. 8vo., sheep, with many wood-cuts.
- Boz's Complete Works, in 8 vols. 8vo., extra cloth, with numerous plates; and wood-cuts.
- Same work, common edition, in paper, 9 parts, price \$4. Any Book sold separate.
- Same work in 3 large vols., good paper, fancy cloth, price \$3 75. (A Fourth Volume preparing.)
- Benthamiana: Extracts from Bentham, in 1 vol. 12mo.
- Browne's Religio Medici, 1 vol. 12mo., extra cloth.
- Bell's (Ellis, Currer and Acton, authors of "Jane Eyre, Wildfell Hall," &c.) Poems, 1 vol. small 12mo. Now Ready.
- BOLMAR'S FRENCH SERIES**, consisting of—  
 A Selection of One Hundred Perrin's Fables, with a Key to the Pronunciation.  
 A Series of Colloquial Phrases.  
 The First Eight Books of Fenelon's Telemachus.  
 Key to the same.  
 A Treatise on all the French Verbs, Regular and Irregular.—The whole forming five small volumes, half bound to match.
- Butler's Atlas of Ancient Geography, 8vo., half bound.
- Butler's Geographia Classica, 1 vol. 12mo.
- Bird's Elements of Natural Philosophy, from the third London edition, 1 vol. royal 12mo., sheep or cloth, with 372 illustrations.
- Brigham on Mental Cultivation, &c., 12mo., cloth.
- BRIDGEWATER TREATISES**. The whole complete in 7 vols. 8vo., various bindings: containing—  
 Roget's Animal and Vegetable Physiology, in 2 vols., with many cuts.  
 Kirby on the History, Habits, and Instinct of Animals, 1 vol., with plates.  
 Prout on Chemistry.  
 Chalmers on the Moral Condition of Man.  
 Whewell on Astronomy.  
 Bell on the Hand.  
 Kidd on the Physical Condition of Man.  
 Buckland's Geology, 2 vols., with numerous plates and maps.  
 Roget, Buckland, and Kirby are sold separate.
- Bird's Calavar, or the Knight of the Conquest, 2 vols. 12mo., paper, price 50 cents.
- Boys's Treasury of Sports and Pastimes, 1 vol. 18mo., crimson cloth, 400 illustrations; a beautiful and cheap work.
- Barnaby Rudge, by "Boz," paper or cloth.
- Browning's History of the Huguenots, 1 vol. 8vo.
- Brewster's Treatise on Optics, 1 vol. 12mo., cuts.
- Babbage's "Fragment," 1 vol. 8vo.
- Campbell's Lives of the Lord Chancellors of England, from the Earliest Times to 1838, now complete in 7 handsome crown octavo volumes, extra cloth.
- CHRISTMAS STORIES**—The Chimes, Carol, Cricket on the Hearth, and Battle of Life, together with Pictures from Italy, by Dickens, 1 vol. 8vo., paper, price 37½ cents.
- Complete Cook, paper, price only 25 cents.
- Complete Confectioner, paper, 25 cents.
- Complete Florist, paper, 25 cents.
- Complete Gardener, paper, 25 cents.
- Curiosity Shop, by "Boz," paper or cloth.
- C. Julii Casarii Commentarii de Bello Gallico, 1 vol. 18mo., neat cloth; being vol. 1 of Schmitz and Zumpt's Classical Series for Schools.
- Campbell's Complete Poetical Works, in 1 vol. crown 8vo., cloth gilt or white calf, plates.
- Cooper's Naval History of the United States, complete in 1 vol. 8vo., cloth, with plates and maps.
- Cooper's Novels and Tales, in 23 vols., sheep gilt, 12mo., or 47 vols. paper, at 25 cents per volume.
- Cooper's Sea Tales, 6 vols. 12mo., cloth.
- Cooper's Leather Stocking Tales, 5 vols. 12mo., cloth.
- Carpenter's Comparative Anatomy and Physiology, with numerous wood-cuts (preparing).
- Croly's History of the Christian Religion, to be complete in 3 vols. (preparing).
- Clater on the Diseases of Horses, by Skinner, 1 vol. 12mo.
- Clater's Cattle and Sheep Doctor, 1 vol. 12mo., cuts.
- Don Quixote, translated by Jarvis, with numerous illustrations by Johannot; 2 vols., beautiful crown 8vo., crimson cloth or half morocco.
- Davidson, Margaret, Memoirs of and Poems, in 1 vol. 12mo., paper, 50 cents, or extra cloth.
- Davidson, Lucretia, Poetical Remains, 1 vol. 12mo., paper, 50 cents, or extra cloth.
- Davidson, Mrs., Poetry and Life, in 1 vol. 12mo., paper, 50 cents, or extra cloth.
- Dana on Corals, 1 vol. royal 4to., extra cloth; being vol. VIII of the Ex. Ex. publications.
- Dombey and Son, by Dickens; cheapest edition, 8vo., paper, with 16 plates, price 50 cents.
- Same work, fine edition, extra cloth, with 40 plates.
- Dog and Sportsman, by Skinner, plates, 1 vol. 12mo., cloth.
- Dunglison on Human Health, 1 vol. 8vo., cloth or sheep.



- Evans's Sugar Planter's Manual, 1 vol. small 8vo., extra cloth, with illustrations, (now ready).
- Encyclopædia of Geography, in 3 octavo vols., many cuts and maps, various bindings.
- Encyclopædia Americana, 14 vols. 8vo., various bindings.—Vol. 14, bringing the work up to 1846, sold separate.
- East's King's Bench Reports, edited by G. M. Wharton, 16 vols. in 8, large 8vo., law sheep.
- Education of Mothers, 1 vol. 12mo., cloth or paper.
- Endless Amusement, neat 18mo., crimson cloth, with cuts.
- Fielding's Select Works, in 1 large vol. 8vo., cloth. Also, same work, 4 parts, paper, viz., Tom Jones 50 cents, Joseph Andrews 25 cents, Amelia 25 cents, and Jonathan Wild 25 cents.
- Francatelli's Modern French Cook, in 1 vol. 8vo., with many cuts.
- Fownes' Recent Work on Chemistry, second edition, by Bridges, 1 vol. 12mo., many cuts, sheep or extra cloth.
- Grahame's Colonial History of the United States, 2 vols. 8vo., a new edition.
- Graham's Elements of Chemistry, 1 vol. large 8vo., many cuts, (new edition, in press.)
- Gieseler's Ecclesiastical History, 3 vols. 8vo.
- Griffith's Chemistry of the Four Seasons, 1 vol. 12mo., many cuts.
- Griffith's Medical Botany, 1 large vol. 8vo., extra cloth, 350 cuts.
- Grote's History of Greece, to form a neat 12mo. series. (*Preparing.*)
- Hawker on Shooting, Edited by Porter, with plates and cuts, 1 beautiful vol. 8vo., extra cloth.
- Herschel's Treatise on Astronomy, 1 vol. 12mo., cuts and plates.
- Hervey's (Lord) Memoirs of George II. and Queen Caroline, a new and interesting work, 2 vols. royal 12mo. (Now ready.)
- Hale's Ethnology and Philology of the U. S. Exploring Expedition, 1 vol. royal 4to., extra cloth.
- Howitt's (Mary) Children's Year, a handsome juvenile, square 18mo., fancy paper, crimson cloth, or cloth gilt, with plates.
- Howitt's (William) Hall and Hamlet, or Scenes and Characters of Country Life, 1 vol. large 12mo., paper, price 50 cents.
- Hemans' Complete Poetical Works, in 7 vols. 12mo.
- Hemans' Memoirs, by her Sister, 1 vol. 12mo.
- Holthouse's Law Dictionary, by Penington, 1 vol. large 12mo., law sheep.
- Hilliard on Real Estate, new and much improved edition, 2 large vols. 8vo., law sheep.
- Hill on Trustees, a late and complete work, by Troubat, 1 large vol. 8vo., law sheep.
- Ingersoll's History of the Late War, 1 vol. 8vo.
- Illustrated Series of Scientific Works, beautifully printed.—Now ready, Muller's Physics, Wiesbach's Mechanics, and Knapp's Technology, printed and bound to match. To be followed by others in various branches.
- Johnson's Dictionary of Gardening, by Landreth, 1 vol. large royal 12mo., 650 pages, many cuts.
- Knapp's Technology, or Chemistry Applied to the Arts and to Manufactures. Translated by Ronalds and Richardson, and edited by W. R. Johnson, vol. I. large 8vo., with 214 beautiful wood engravings.—Vol. II. preparing.
- Keble's Christian Year, in 32mo., extra cloth, illuminated title.
- Keble's Child's Christian Year, 1 vol. 18mo., extra cloth.
- Kirby and Spence's Entomology, 1 large 8vo. vol., with plates, plain or colored.
- Louis Blanc's France under Louis Philippe, or the History of Ten Years, 2 large vols. crown 8vo., or 6 parts, paper, at 50 cents.
- Louis Blanc's History of the Revolution of 1789, Vol. I., crown 8vo., cloth.
- Lover's Irish Stories, 1 vol. royal 12mo., with cuts, extra cloth.
- Same work, paper, price 50 cents.
- Lover's Rory O'More, 1 vol. royal 12mo., with cuts, extra cloth.
- Same work, paper, price 50 cents.
- Same work, 8vo., price 25 cents.
- Lover's Songs and Ballads, 12mo., paper, 25 ets.
- Language of Flowers, eighth edition, 1 vol. 18mo., colored plates, crimson cloth, gilt.
- Landreth's Rural Register, for 1843, royal 12mo., many cuts, price 15 cents. Copies for 1847 still on hand.
- Marston, or the Soldier and Statesman, by Croly, 8vo., sewed 50 cents.
- Martineau's Eastern Life, Present and Past, a new work, 1 vol. crown 8vo., extra cloth.
- Matteucci's Lectures on the Physical Phenomena of Living Beings, 1 vol. royal 12mo., cloth, with cuts.
- Mackintosh's Dissertation on Ethical Philosophy, 1 vol. 8vo., cloth.
- Moore's History of Ireland, in 2 vols. 8vo., cloth. Second volume sold separate.
- Martin Chuzzlewit, by "Boz," cloth or paper.
- Muller's Physics and Meteorology, 1 vol. large 8vo., 2 colored plates, and 550 wood-cuts; a beautiful and complete work. Just issued.
- Millwrights' and Millers' Guide, by Oliver Evans, in 1 vol. 8vo., sheep, many plates.
- Mill's History of the Crusades and Chivalry, in one octavo volume.
- Mill's Sportsman's Library, 1 vol. 12mo., extra cloth.
- Mirabeau, a Life History, in 1 handsome 12mo. vol., extra cloth., (just ready.)
- Narrative of the United States' Exploring Expedition, by Captain Charles Wilkes, U. S. N., in 6 vols. 4to. \$60; or 6 vols. imperial 8vo., \$25, with very numerous and beautiful illustrations, on wood, copper, and steel; or 5 vols. 8vo., \$10, with over 300 wood-cuts and maps.
- Niebuhr's History of Rome, complete, 2 large vols. 8vo.
- Nicholas Nickleby, by "Boz," cloth or paper.
- Oliver Twist, by "Boz," cloth or paper.
- Picciola—The Prisoner of Fenestrella, illustrated edition, with cuts, royal 12mo., beautiful crimson cloth.
- Same work, fancy paper, price 50 cents.
- Philosophy in Sport made Science in Earnest, 1 vol. 18mo., neat crimson cloth, with cuts.
- Popular Vegetable Physiology, by Carpenter, 1 vol. 12mo., many cuts.
- Pickwick Club, by "Boz," cloth or paper.
- Rush's Court of London, 1 vol. 8vo.
- Readings for the Young, from the Works of Sir Walter Scott, a handsome juvenile, just issued, in two 18mo. volumes, crimson cloth, with beautiful plates.
- Ranke's History of the Popes of Rome, 1 vol. 8vo., cloth.
- Ranke's History of the Reformation in Germany, to be complete in 1 vol. 8vo.
- Ranke's History of the Ottoman and Spanish Empires, 8vo., price 50 cents.
- Rogers' Poems, a splendid edition, illustrated, imperial 8vo.
- Roget's Outlines of Physiology, 1 vol. 8vo.
- Roscoe's Lives of the Kings of England, a 12mo. series, to match Miss Strickland's Queens.

Sallustii Catalina et Jugurtha, 1 neat 18mo. vol., extra cloth, being Vol. III. of Schmitz and Zumpt's Classical Series for Schools. Now ready.

Somerville's Physical Geography, 1 vol. royal 12mo., now ready.

Steinmetz's History of the Jesuits, in two crown 8vo. vols., 400 pages each, extra cloth, just ready, 1848.

Strickland's Lives of the Queens of England, new and improved edition, 12 volumes in 6, crown 8vo., crimson cloth or half morocco.—N.B. This work is now complete.

Same work, in 12 vols. 12mo., paper or cloth. For the present, any vol. of either edition sold separate.

Strickland's Tales from History, one handsome 18mo. volume, crimson cloth, with illustrations. Select Works of Tobias Smollett, one large vol. 8vo., cloth.

Also, same work, 5 parts, paper, viz., Peregrine Pickle 50 cents, Roderick Random 25 cents, Count Fathom 25 cents, Launcelot Greaves 25 cents, and Humphrey Clinker 25 cents.

Simpson's Overland Journey around the World, crown 8vo., extra cloth.

Same work, 2 parts, paper, price \$1 50.

Siborne's Waterloo Campaign, with maps, 1 vol. large 8vo.

Schmitz and Zumpt's Classical Series for Schools, in neat 18mo. volumes, in cloth.

Stable Talk and Table Talk, for Sportsmen, 1 volume 12mo.

Spence on the Jurisdiction of the Court of Chancery, vol. I., large 8vo., law sheep.

Vol. II., embracing the Practice, (nearly ready.)

SMALL BOOKS ON GREAT SUBJECTS; a neat 18mo. series, price 25 cents each:—

No. 1. "Philosophical Theories and Philosophical Experience."—No. 2. "On the Connection between Physiology and Intellectual Science."—No. 3. "On Man's Power over himself to Prevent or Control Insanity."—

No. 4. "An Introduction to Practical Organic Chemistry."—No. 5. "A Brief View of Greek Philosophy up to the Age of Pericles."—

No. 6. "A Brief View of Greek Philosophy from the Age of Socrates to the Coming of Christ."—No. 7. "Christian Doctrine and Practice in the Second Century."—No.

8. "An Exposition of Vulgar and Common Errors, adapted to the Year of Grace 1845."

Together with various important works now in course of publication.

**MIRABEAU AND THE NATIONAL ASSEMBLY. Now Ready.**

**MIRABEAU, A LIFE HISTORY,**  
IN FOUR BOOKS.

In one neat royal 12mo. volume, extra cloth.

**MISS MARTINEAU'S NEW WORK.**  
Now Ready.

**EASTERN LIFE, PRESENT AND PAST.**

BY HARRIET MARTINEAU.

In One Handsome Crown Octavo Volume.

**SOMERVILLE'S PHYSICAL GEOGRAPHY. Now Ready.**

**PHYSICAL GEOGRAPHY.**

BY MARY SOMERVILLE,

AUTHOR OF "THE CONNECTION OF THE PHYSICAL SCIENCES," &c. &c.

In one neat 12mo. volume, extra cloth.

—No. 9. "An Introduction to Vegetable Physiology, with references to the Works of De Candolle, Lindley," &c.—No. 10. "On the Principles of Criminal Law."—No. 11. "Christian Sects in the Nineteenth Century."—No. 12. "Principles of Grammar," &c.

Or the whole done up in 3 vols., extra cloth. Taylor's Medical Jurisprudence, edited with respect to American Practice, by Griffith, 1 vol. 8vo.

Taylor on Poisons, by Griffith, a new and very complete work, in one large octavo volume.

Traill's Outlines of Medical Jurisprudence, one small vol. 8vo., cloth.

Thomson's Domestic Management of the Sick Room, 1 vol. 12mo., extra cloth.

Tokeah, by Sealsfield, price 25 cents.

Tucker's Life of Thomas Jefferson, 2 vols. large 8vo., cloth.

Virgili Carmina, 1 neat 18mo. vol., extra cloth, being vol. II. of Schmitz and Zumpt's Classical Series. Now Ready.

Walpole's Letters, in 4 large vols. 8vo., ex. cloth.

Walpole's New Letters to Sir Horace Mann, 2 vols. 8vo.

Walpole's Memoirs of George the Third, 2 vols. 8vo.

White's Universal History, a new and improved work for Schools, Colleges, &c., with Questions by Professor Hart, in 1 vol. large 12mo., extra cloth or half bound.

Weisbach's Principles of the Mechanics of Machinery and Engineering, edited by W. R. Johnson, vol. I. large 8vo., with 550 beautiful wood-cuts, now ready.

Vol. II., same size and appearance, (preparing.)

William the Conqueror, Life of, by Roscoe, 1 vol. 12mo., extra cloth or fancy paper.

Wheaton's International Law, 1 vol. large 8vo., law sheep, or extra cloth, third edition, much improved.

Wraxall's Posthumous Memoirs, 1 vol. 8vo., extra cloth.

Wraxall's Historical Memoirs, 1 vol. 8vo., extra cloth.

Youatt on the Horse, &c., by Skinner, 1 vol. 8vo., many cuts.

Youatt on the Dog, with plates, 1 vol. crown 8vo., beautiful crimson cloth.

Youatt on the Pig, 1 vol. 12mo., extra cloth, with cuts.

Same work, in paper, price 50 cents.



THE  
**AMERICAN JOURNAL**  
 OF THE  
**MEDICAL SCIENCES.**

EDITED BY ISAAC HAYS, M. D.,

Is Published Quarterly

ON THE FIRST OF JANUARY, APRIL, JULY AND OCTOBER.

Each Number contains about Two Hundred and Eighty Large Octavo Pages.

And is appropriately Illustrated with Engravings on Copper, Stone, Wood, &c.

THE MEDICAL NEWS AND LIBRARY,

Is Published Monthly, and consists of

THIRTY-TWO VERY LARGE OCTAVO PAGES,

Containing the Medical Information of the day, as well as a Treatise of high character on a prominent department of Medicine.

WATSON'S LECTURES ON THE PRACTICE OF PHYSIC,

BRODIE'S CLINICAL LECTURES ON SURGERY,  
 AND TODD & BOWMAN'S PHYSIOLOGY

Have thus appeared in it, and the work at present publishing is

WEST ON THE DISEASES OF INFANCY AND CHILDHOOD.

TERMS.

THE SUBSCRIPTION TO THE  
**AMERICAN JOURNAL OF THE MEDICAL SCIENCES,**

IS

**FIVE DOLLARS PER ANNUM.**

When this amount is forwarded by the first of February, free of postage, it is considered in advance, and the subscriber thereby becomes entitled to the

**MEDICAL NEWS AND LIBRARY FOR ONE YEAR,**

Without further charge.

For the small sum of

**FIVE DOLLARS,**

therefore, the subscriber can obtain a Quarterly and a Monthly Journal of the highest character, presenting about

**FIFTEEN HUNDRED LARGE OCTAVO PAGES,**

With appropriate Illustrations:

**Or, for TEN DOLLARS,**

the publishers will furnish

**TWO COPIES OF THE JOURNAL, AND THREE OF THE NEWS;**

**Or, for TWENTY DOLLARS,**

**FIVE COPIES OF THE JOURNAL AND FIVE OF THE NEWS.**

Thus presenting strong inducements to Clubs. Postmasters and others will also thus find it worth their attention to obtain subscribers and remit their subscriptions for these works, which are among

THE CHEAPEST OF

**AMERICAN MEDICAL PERIODICALS.**

When the News is ordered separately, the subscription is One Dollar per annum, invariably in advance.

\* \* \* A few copies of the Journal and News for 1848 being on hand, the publishers will still supply both periodicals for Five Dollars, if remitted immediately.

In calling the attention of the profession to the high character of the American Medical Journal, the publishers append an extract from the report of "The Committee on American Medical Literature," to the National Medical Association at their meeting in Baltimore, May, 1848. After adverting to other matters, they say:—

"The '*Philadelphia Journal*,' which has been already mentioned, was succeeded by the '*American Journal of the Medical Sciences*,' established in 1827, and still continued, having reached its forty-first volume. The long standing of this publication, the support which it has received from many of the best writers in different parts of the country, and the elevated literary character and spirit which have distinguished it, have rendered it a favourite organ of the profession. So much of what is valuable in our periodical literature, during the long protracted period of its existence, has found a place in its pages, that it would be going beyond the limits of this report to attempt an analysis of its contents. Here have been recorded many of those daring operations which are dwelt upon with so much pride by the American surgeon. Numberless cases of unusual interest have been here related by their observers, often accompanied by illustrations, for the most part creditable to the art which has furnished them. Many of the reviews which it contains are conceived and executed in a higher spirit than the mere mechanical analyses and Taliacotian abstracts which so frequently usurp this department of scientific as well as literary journals. This periodical is so well known through the country, and a complete series of it so generally contained in public libraries, that a general index to it from the commencement would be one of the most acceptable offerings which could be made to the medical reader.

"The committee had prepared an account of the most prominent articles under their several heads, but it proves to be too voluminous for a report like the present. The names of some of its contributors will be enough to show how extensively it has been supported by the ablest writers and practitioners of the country. In *Anatomy and Physiology*, original papers have been furnished by Drs. Horner, Moultrie, Coxe, Mussey, Warren, Earle, Smith, Alison, Harrison, Gardner, Leidy and others. In *Surgery*, Drs. Godman, Mussey, Randolph, H. & J. M. Warren, Coates, Mott, Norris, Kirkbride, Geddings, Nott, Shipman, Markoe, Parrish, Mettauer, Mütter, Horner, Pancoast, Watson, Atlee, Hayward, are among those who have lent their assistance, some of the best known among them in many elaborate articles. In the department of *Practical Medicine*, a great number of original Reports and Essays have been supplied by Drs. Chapman, S. Jackson, Emerson, Coxe, Horner, Hayward, Ware, Wright, Jackson (of Northumberland), Parrish, Pennock, Gerhard, Fisher, Nichols, E. Warren, Paine, Bigelow, Webber, Lindsay, Forrey, Beck, Flint, Coale, Earle, Stewardson, Kirkbride, Shanks, Parry, Mettauer, Whitney,

Pepper, Hall, Dexter, Jarvis, Beck, Wharton, Lovett, Nott, Moreton Stillé, Boling, Tabb, Taylor, Porter, Tuck, J. B. S. Jackson, Peebles, Kneeland, Gardner, Buckler, Mendenhall, Lane, and R. S. Holmes. On *Midwifery*, and the *Diseases of Women and Children*, among the principal contributors of original papers have been Drs. Dewees, Horner, Bigelow, Hodge, Gerhard, Geddings, Lindsay, E. Warren, Roberts, Lee, Kane, Shanks, Taylor, Bowen, Buel, Barwell, Bond, Sargent, Sims, and Baldwin. Many other names might be added to these lists, which, however, are sufficient evidence that the journal has been willingly and heartily upheld by the profession."

After enumerating the other Medical Journals published in the United States, the report continues:—

"The committee will now proceed to a brief enumeration of the more important articles, which have, within the past year, or at least recently, been presented to the profession in the medical journals of this country, taking them up in the order in which they have been enumerated.

"*American Journal of the Medical Sciences.*

—The number for January, 1847, contains one of Dr. Norris's admirable *resumés*, a 'Table showing the mortality following the operation of tying the iliac arteries.' It is founded upon a hundred and eighteen cases gathered from various sources, which are presented in a condensed form and subjected to a careful analysis. The committee have already fully expressed their sense of the importance of Dr. Norris's labours. The paper which follows, by Dr. Trask of Brooklyn, N. Y., is worthy of succeeding that just mentioned. Four very full tables containing the history of fifty-three cases of phlegmasia dolens are given in this essay, the final object of which is to establish the pathology of the affection. Articles like the two just cited, are necessarily of permanent value. They cannot be superseded, because they have a solid basis of fact, and even if some of their conclusions were erroneous, the materials would remain as the basis of future results. The increased number of these laborious analytical surveys is one of the most encouraging features of our medical literature. In the midst of interminable discussions upon the value of the numerical system, the simple fact that tabulation affords a final result respecting a given number of facts, which mere perusal fails to do, is making itself felt like every truth which has time and fair play. The next article is one by Dr. Kirkbride on Hospitals for the Insane, and the fourth a brief account by Dr. Wilcocks, of the epidemic remittent and intermittent of 1846. Then follow four cases of acute affection of the



spinal marrow, with dissections, by Dr. J. B. S. Jackson of Boston, marked by his accustomed accuracy of description. Several other cases are reported in this number, which contains two reviews of some interest, and the usual variety in its minor departments.

"The first article in the number for April 1847, is one of great practical interest. It is the '*History of seven cases of Pseudo-membranous Laryngitis or True Croup*,' by Dr. J. F. Meigs. The fact that recovery took place, in four cases where there was fibrinous exudation on the fauces, entitles the history of these cases to the most careful examination, and affords a strong presumption in favour of the general plan of treatment adopted. It is well known that long series of similar cases have been observed, every one of which has proved fatal, and that the whole question of treatment is considered as involved in perplexity by many able observers. The paper which follows, by Dr. Baldwin, *Observations on the Poisonous Properties of the Sulphate of Quinine*, has been most extensively quoted, and has called out various other communications confirming the results at which he has arrived. In the malarious regions of our country, where the "monster doses" of this heroic remedy are so commonly given, it is of vital importance that all the risks they involve should be generally known. Then follow various reports of medical and surgical diseases, among which Dr. Earle's eleven cases of general paralysis of the insane cannot fail to be noticed for their psychological and pathological bearings, as well as the happy way in which they are related. A practical essay by Dr. Hildreth, on letting blood from the jugular in diseases of children concludes the list of original communications.

"The July number opens with another statistical article from Dr. Norris, on the operation of tying the carotids, of the same high character with those which he has furnished in previous numbers. The next paper is one by Dr. Halliwell, on cholera infantum, which he calls by the singular name of *gastro-follicular enteritis*; which would seem to imply inflammation of the intestines seated in the follicles of the stomach. The essay is an instructive one, based on considerable experience and supported by two reported cases with a tabular analysis of twelve *post-mortem* examinations. A '*Note on the frequency of the pulse and respiration of the aged*,' by Dr. Pennock, adds authority to the curious results obtained by Leuret and Mitivic, who found the average frequency of the pulse in young men to be 65 per minute, while that of the aged was 73; a statement in direct opposition to the prevailing belief on this point. '*Hydrophobia, or the use of cold water for the Prevention and Cure of Disease*,' by Dr. Kneeland, is the title of a Boylston prize essay, here published without any allusion to its laureate honours. The key to the author's position is found in the following sentence: 'Instead of leading man back to the forsaken paths of nature, physicians

have preferred the easier plan of ministering to this altered condition by the ingenious and stupendous system of modern therapeutics.' He appears to believe, and as the Committee think, very justly, that much indirect benefit may result even from the experiments of the hydro-pathist and homœopathist, notwithstanding the illusions and impositions that surround the fountain of the Silesian boor and the laboratory of the Saxon necromancer. The interest of Dr. Brown's account of his visit to the Cretins, in the institution on the Abendberg, is owing not merely to the novelty of the subject, which is just beginning to attract the attention of philanthropists, but to the agreeable style of the narrative. In a country which has done as much as our own for the insane, the blind and the deaf and dumb, it cannot be long before the improvement of the condition of the unfortunate idiot will be felt to be a public duty. Dr. Mettauer, whose name is familiar to the records of operating surgery, reports two cases of vesico-vaginal fistula, with the operations for their relief, one of which was perfectly successful, and the other, though repeated again and again, was but partially so. But this, as Dr. Mettauer thinks, was owing to the patient's amiable indiscretions, and he is decidedly of opinion that every case of vesico-vaginal fistula can be cured. Dr. Harris relates a case of doubtful sex, in connection with which the editor quotes that described by Dr. Barry, in the *New York Journal of Medicine* for January, 1847. Dr. Boling's new sign of pneumonia of the apex of the lungs, needs confirmation by other observers. The Committee can affirm, at least, that it is not constant. It was extraordinary if, as Dr. Boling asserts, the chest remained still resonant on percussion over the apex of the lung in a state of hepatization. This number contains a long notice of Dr. Wood's *Practice of Medicine*, by one of the most searching and skilful reviewers our periodicals have ever enlisted in their service. It may be hinted, that one epithet, however *judicious*, must not be repeated too often; the accomplished reviewer remembers Gyas and Cloanthus.

"The number for October, 1847, has for its leading article a continuation of Dr. Metcalf's *Statistics in Midwifery*, containing the results of 927 cases observed in private practice. It is a most creditable production to the author and the friends by whom he was aided, and may serve as an encouragement and a model to other practitioners situated at a distance from the more active centres of scientific industry. Dr. Michel's history of an early ovum is not without interest, though its illustration is less exquisite than the '*Icones*' of Wagner, and the style is wanting in the simplicity which should belong to an anatomical description. Dr. Harden's Essay on *Isopathia*, agrees with the general belief in maintaining the similarity of scrofula and phthisis, but will hardly be thought to have established the doctrine, that Bright's disease is



*isopathic* with these affections. Why *molluscum* should come under the same head is hard to explain. In the days of isomerism and isomorphism, it is natural enough for a medical observer to be pleased with the thought of introducing some such parallelism of elements into medicine, but it may be questioned, how much is gained by the somewhat promiscuous erudition and finely drawn propositions of this elaborate essay, beyond a harmonious name for a well known principle. Dr. Kelley of Mobile, has given an account of yellow fever as this disease has presented itself to his own notice, written in clear and simple language, and keeping more closely than many writers on this subject have done to the strict results of observation. Some remarkable surgical cases and operations, a case of incision of the os uteri during labour on account of its partial occlusion, some researches on the structure and functions of the ciliary processes, and the case of the murderer Freeman, with a long review of some of the Boâ Vista fever documents, finish the list of original articles. In this number, October 1847, appears a new and distinct head of medical intelligence, entitled *ether inhalation as a means of annulling pain*. It is remarkable, that as so much patient deliberation was shown in preparing the abstract of what was before the public, on this subject, an article like that of Dr. Pickford should be admitted, but more remarkable still, that any sensible reader should have been frightened out of receiving the last great gift of Mercy, by the assertions of such a writer, as would appear to have happened in at least one instance.

"In the number for January 1848, the leading article is Dr. Leidy's paper on the Comparative Structure of the Liver. This is unquestionably the most exact and complete Essay in the department of microscopic anatomy which has appeared in any American Medical Journal. The patient accuracy of the measurements, the finish and clearness of the numerous illustrations are nothing more than would have been anticipated by those who know the zeal and talent of this exquisite dissector and delineator. The article which follows, by Dr. Frick, is one of the first attempts at the investigation of the chemical changes of the blood induced by disease, made in this country. Most of the conclusions arrived at by the laborious observations which served as its basis, coincide with those of previous observers. One peculiar and novel result arrived at by Dr. Frick is, that the quantity of the chlorides and phosphates of soda and potash is dependent, not upon the particular disease, but upon the *season of the year* in which the examination is made, being much higher in winter and spring than in summer and fall. Dr. Foltz deserves credit for printing his valuable Report on Scorbutus. It could be wished that

all officers in the public service would discharge their professional debt as faithfully. Some of the author's expressions would seem to imply that *proteine exists only in vegetables*, which cannot surely have been what he intended to assert. Dr. Blake's paper appears to be founded on the same experiments which this ingenious physiologist reported some years ago to the British Association, and which have already taken their place in physiological science. The indefatigable Dr. Earle gives a brief analysis of five hundred and ninety-four cases of delirium tremens admitted into the Bloomingdale Asylum. Then follow several reports of interesting surgical cases; under the name of 'Monograph' we have next 'A Statistical Inquiry into the Causes, Symptoms, Pathology, and Treatment of Rupture of the Uterus,' by Dr. Trask, of Brooklyn, whose labours have been already mentioned with commendation.

"The first paper in the April number is an account, by Dr. J. M. Warren, of Operations for Fissure of the Soft and Hard Palate, with the result of twenty-four cases, at the close of which is an important additional note upon the early operation for hare-lip. Dr. Warren proposed, some years ago, and has often executed, a new operation, which is fully described in this paper and the annexed cases. Dr. Peeble's 'Result of cases of Pneumonia, treated chiefly by Tartar Emetic,' may be well calculated to excite attention to the possible ill effects of that remedy, but is deficient in the diagnostic elements of its cases. The third patient, for instance, may have suffered, for all that appears, from phthisis with ulceration of the bowels. It does not appear from the record that the previous good health had persisted unchanged up to the period of the acute attack. Cases of successful vaginal hysterotomy and delivery by the forceps; of traumatic trismus successfully treated; of a fatal gun-shot wound of the neck; of ligature of both carotids; of the extirpation of a tumour of the uterus, simulating ovarian disease; of cancer of the stomach, and of melanosis, are reported in this number—certainly a very remarkable collection of important medical and surgical histories, and implying an ample supply of materials to allow of such selections. Add to this Dr. Parson's 'Statistics of Large Surgical Operations,' the Midwifery Statistics from private practice, by Dr. Pleasants, and the continuation of Dr. Trask's paper on Rupture of the Uterus, probably the most complete account of that accident to be found in print, and it must be owned that the patriarchal quarterly has not fallen below its own high standard of merit, at the point where the Committee takes leave of it for the present."\*

\* These extracts are from copies of the Report to be furnished to the Chairman of that Committee, Dr. Holmes of Boston.





















DEC 15 1982

PLEASE DO NOT REMOVE  
CARDS OR SLIPS FROM THIS POCKET

---

UNIVERSITY OF TORONTO LIBRARY

---

MS            Brodie, (Sir) Benjamin Collins  
B                Select surgical works

BioMed

